Plasmon

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The Plasmon V Series

V40-V102 Libraries - LTO Drive

User Manual

P/N 97705224 A

Copyright

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Trademark Notices

Revision History

Revision	Date	Description
A	12/02	Complete rewrite using new format. Changed part number from 305289-000 C to 97705224 A

NOTE

The most current information about this product is available on the Plasmon web site (www.Plasmon.com).

Conventions Used

WARNING

A **WARNING** is used to alert the reader to situations or conditions that could potentially result in personal injury, fire hazard, or equipment damage.

CAUTION

A **CAUTION** is used to warn of undesirable procedures, or of situations in which equipment damage could result.

NOTE

A **NOTE** is used to emphasize an area of text or to provide additional information.

Product Warranty

The Plasmon® V Series library is warranted free from defects in materials, parts, and workmanship and to conform to the current product specification upon delivery. For the specific details of your warranty, refer to your sales contract or contact the company from which the library was purchased.

The Plasmon quality system is in compliance with and registered to ISO9001. All products are assembled from new or remanufactured parts.

The warranty for the library shall not apply to failures of any unit when:

- The library is repaired by anyone other than Plasmon personnel or approved agent.
- The library is physically abused or is used in a manner that is inconsistent with the operating instructions or product specification defined by Plasmon.
- The library fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The library is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by Plasmon.
- The Plasmon serial number tag is removed.
- The library is damaged because of improper packaging on return.

CAUTION

Returning the library in unauthorized packaging may damage the unit and void the warranty.

If problems with the library occur, contact your maintenance organization; do not void the product warranty by allowing untrained or unauthorized personnel to attempt repairs.

WARNING

Untrained personnel operating the Plasmon V Series library may create dangerous situations. This could lead to physical harm to the operator, data loss, and/or disabling of the library system.

Please review and observe all safety rules concerning the operation of the Plasmon V Series library.

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CHAPTER 1
PRODUCT OVERVIEW

General Information

The Plasmon V Series libraries make multiple LTO tape media available to computer systems for reading or writing. V Series library capacity ranges from 40 to 102 media. Media may be quickly added or removed through a five slot bulk load magazine accessed through the front door. With the V68 and V102 models, individual media may also be added or removed through a mailslot in the front door while the library is on line.

Library Models

This manual covers the following Plasmon V Series libraries:

Table 1. V Series Library Models

Model	Maximum Tape Media Capacity	MAX Drive Capacity
V40	40	4
V60	60	4
V68	68	6
V102	102	6

LTO Tape Media

The Plasmon V Series library uses LTO tape media with 100 GByte capacity.

Data is written to and read from a tape enclosed within a carrier cartridge.

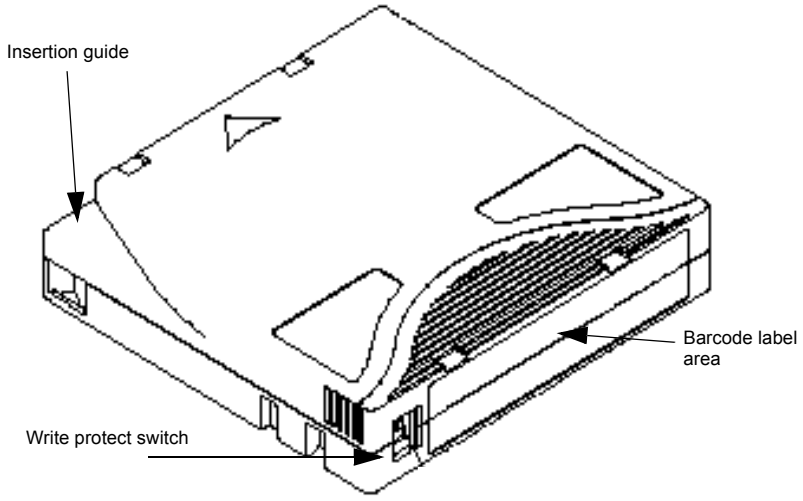

Figure 1. LTO Tape Media

CAUTION

Do not write on, cover, or obscure the bar codes on a media. Doing so may cause the system to malfunction.

Barcode Label

For more detailed information about bar code data and how it is read, refer to the *V Series SCSI Reference Manual.*

The V Series bar code scanner supports the following bar code symbologies:

- Code 39
- Code 128

The bar code string consists of up to 20 alphanumeric characters.

Never place a label anywhere on the media except in the specified "label area", as this may interfere with the proper handling of the media in the drive or the media transport element (MTE).

Media Care and Handling

To maintain maximum reliability, the operator should take the time to inspect and clean each media used.

CAUTION

Before using the media, condition them to the normal operating temperature of the room for at least 24 hours.

Improper handling or an inappropriate environment can damage the media. To ensure continued reliability:

- When media is loaded into the library, or when handling media, ensure that the cartridge case is clean. Dirty media cartridges can cause problems in loading or the loss of written data. If a cartridge case is dirty, wipe with a lint free cloth.
- Do not carry media loosely (for example, in a box or basket).
- Do not load damaged media into a drive or a library. Damaged media can interfere with reliability.
- Never touch the tape. Opening the cartridge door and touching the tape may interfere with read/write reliability.
- Do not expose the media to moisture or direct sunlight.
- Do not expose media to stray magnetic fields greater than 100 oesteds. Such exposure can cause loss of data.
- Do not attempt to degauss or AC bulk erase a media. This renders the media unusable.

Component Interaction

The following example describes how the library system components interact in a swap media situation, assuming the library is on-line and media is loaded in the designated drive.

1. The SCSI command Load/Unload is sent from the host to the drive causing the mexcia to eject.
2. The SCSI command Read Element Status is sent from the host to the library, and the data transfer element descriptor indicates that the ejected media can be accessed by the library.
3. The SCSI command Exchange Medium is sent from the host to the library, and the storage slot of a new media is specified.
4. The media transport element (MTE) moves to the drive.
5. The picker extends forward, picks the media out of the drive, and retracts with the media back into the transport element.
6. The MTE moves to the original location of that media.
7. The picker extends forward and inserts the media back into the storage slot.
8. The MTE then moves to the storage slot of the next requested media.
9. The picker extends forward, picks the media, and retracts with the media back into the transport element.
10. The MTE moves to the drive position to insert the media into the drive.
11. The picker extends forward and inserts the media into the drive, then retracts back into the transport element while the drive pulls the media into itself.
12. Completion status is returned to the host.

Major Hardware Components

Refer to the following figures when reading the information in this section.

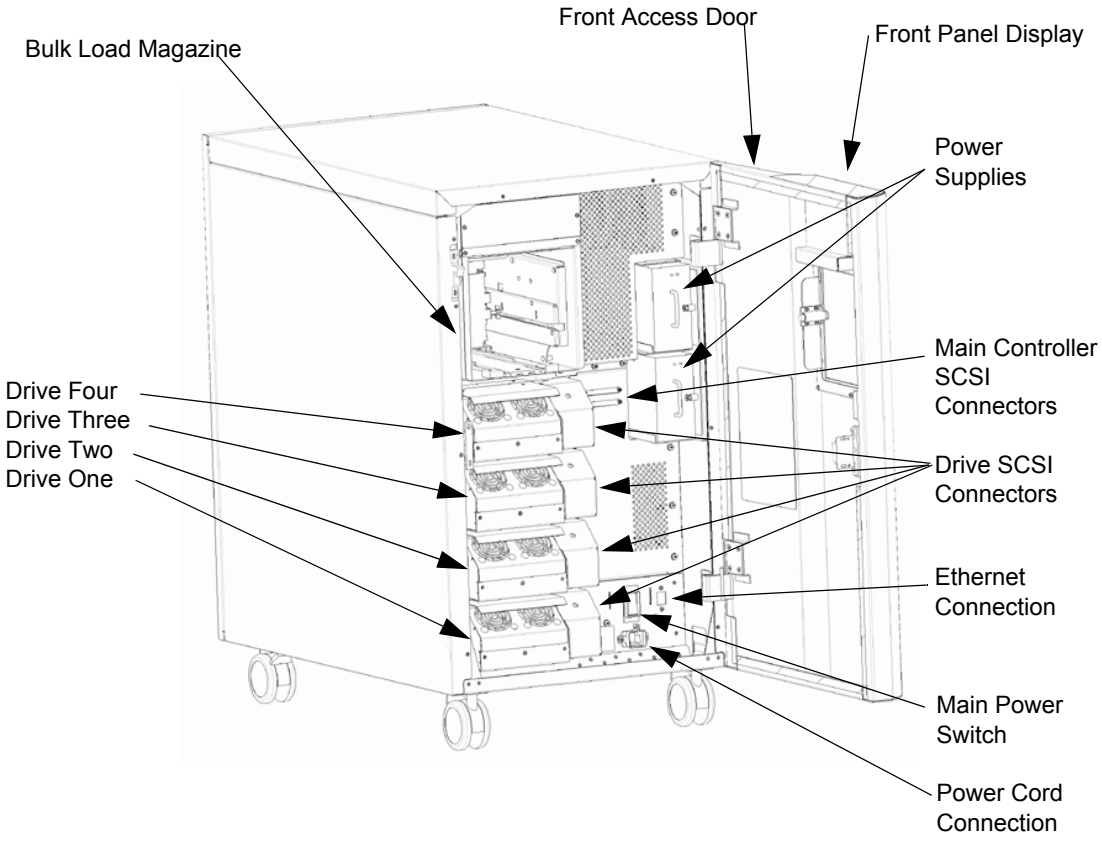

Figure 2. V40 - V60 Libraries, Front View

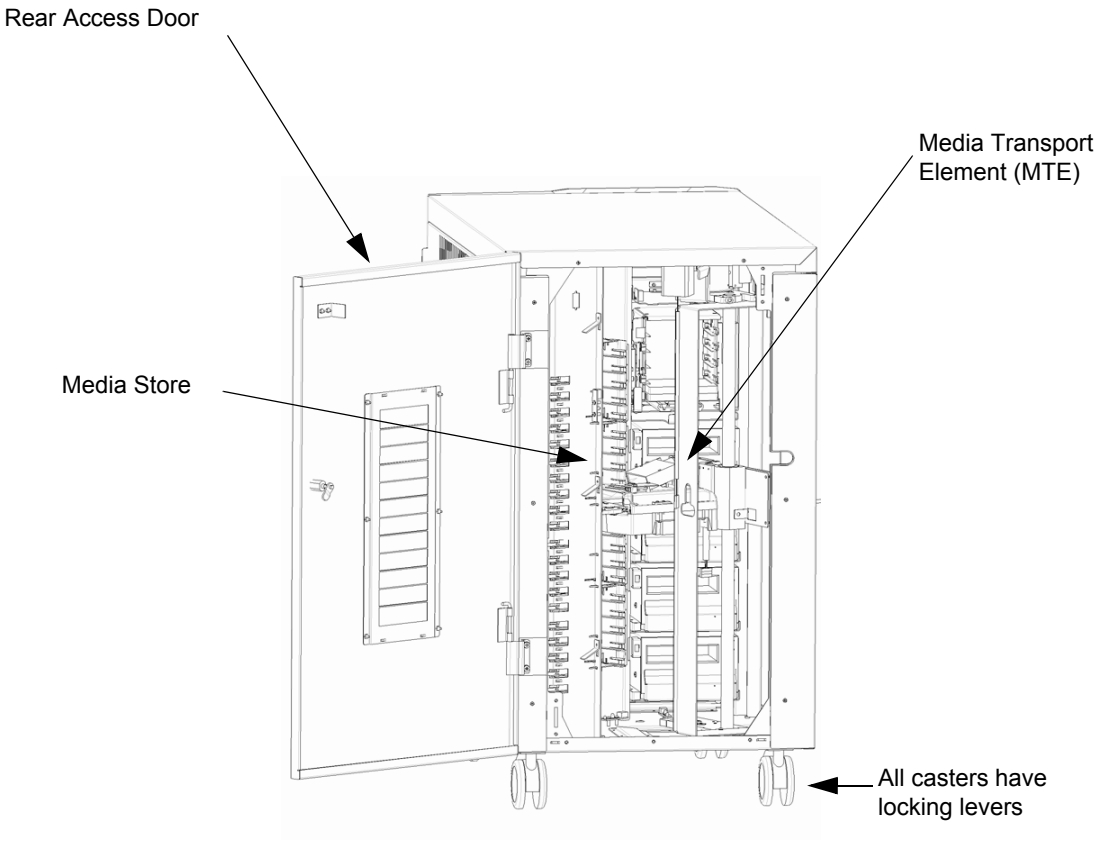

Figure 3. V40-V60 Libraries, Rear View

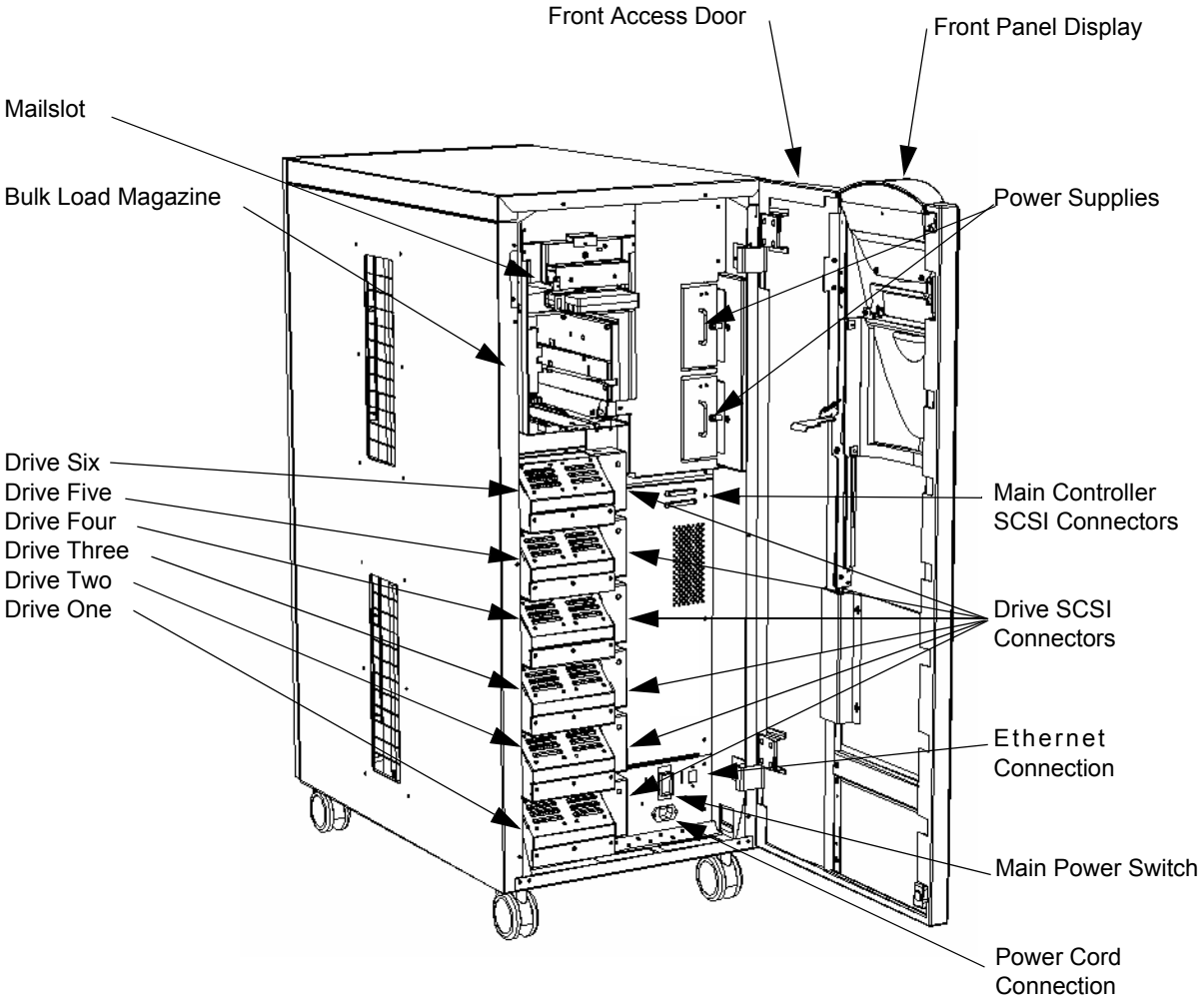

Figure 4. V68-V102 Libraries, Front View

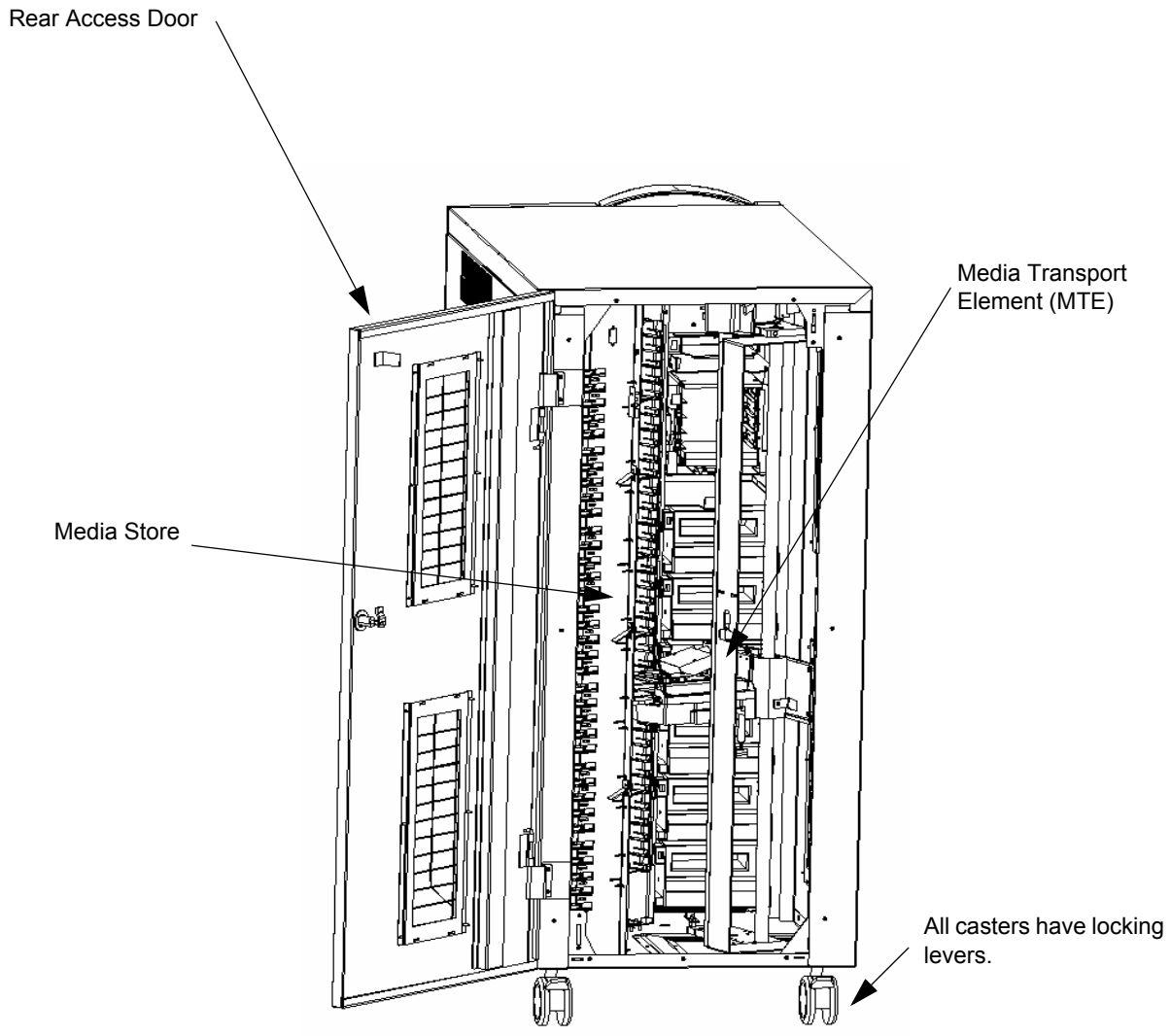

Figure 5. V68-V102 Libraries, Rear View

Front Access Door

The front access door is used to gain access to the drives, power supplies, main power switch, AC connection, SCSI connections, and electronic components.

Rear Access Door

The rear access door is used to gain access to the robotics or to hand place media in storage slots for initial bulk loading. This door incorporates an interlock system requiring a key.

Mailslot

On V68 and V102 models only the mailslot provides access for adding or removing individual media. This function may be disabled via software or front panel operation.

Bulk Load Magazine

The bulk load magazine is capable of importing and exporting up to five media.

Front Panel

The front panel consists of the keypad and display controller, which provide the operator interface to the system. Also called the operator panel, it is used to display tests, modes, error codes and other user related messages.

Media Store

The media store holds each media in place. It consists of vertically arranged plates with plastic grooved guide panels that hold each media.

Media Transport Element (MTE)

The media transport element (MTE) moves media between storage locations and the disk drives, and consists of the picker and flip assembly.

Drives

The drives used in the library allow reading and writing of data. They are fully tested to work with the library.

Contact Plasmon for the latest drive updates.

SCSI Interface

The SCSI interface provides for connection between the library and a host computer. The interface to the library is an LVD/SE SCSI bus, using shielded 68 pin high density connectors.

CHAPTER 2
LIBRARY INSTALLATION

Quick Installation

This section provides a guide to installing the Plasmon V Series library and the procedures necessary to quickly get the library on-line.

Unpacking the Library

Please follow the unpacking instructions found on the packing material. Verify that all listed components are present.

1. Using the enclosed key, open the rear door of the library system.
2. Remove all the shipping restraints from the media transport element (MTE).

CAUTION

Use minimum force when removing the restraints and packing material from the MTE.

Library Position

Position the library in a location that allows both the front and rear door to open completely without obstruction. Allow at least a two inch clearance on the sides for ventilation. Lower the leveling feet to the floor to stabilize the library. If the library is a V40 or v60 stand alone model, install the stabilizers following instructions provided later in this chapter.

Loading Media

Use only Plasmon approved LTO Ultrium tape media in the library. Media is loaded into the library using one of three methods.

- **Mass Loading (recommended):** This method is intended as a one time solution to mass load the entire library with media when the library is off-line and there is no power applied.
- **Automated Mailslot (not available on the V40 and V60 models):** This is intended for importing and exporting a single piece of media while the library is on-line.
- **Five Slot Magazine:** This is intended for importing and exporting up to five pieces of media in a removable magazine while the library is on-line.

Mass Loading (Recommended)

Ensure that the library is turned off and that the power cable is disconnected from the wall outlet.

1. Using the enclosed key, open the rear door of the library system.

   The rack mount versions do not have a rear door. The rear panel must be removed by removing the screws.

2. Insert the media into the slots with the tape door end of the media going in first.

NOTE

There are no requirements for loading media in a specific order. Plasmon recommends filling the storage slots in numerical order, starting with slot number one. See the storage slot map on the inside of the rear door for the storage slot numbering system.

3. Completely insert the media into the storage slot until it contacts the rear of the storage slot.

Figure 6. Mass Loading Media

4. Continue loading all media in the storage slots.
5. Close and lock the rear door.

Automated Mailslot

The automated mailslot (not on the V40 and V60 models) is for importing and exporting single media while the library is on-line.

Figure 7. Using the Mailslot

Using the front panel, a single piece of media can be imported or exported through the mailslot door. Once the appropriate key is selected on the front panel, the door opens automatically and a media carrier extends outwards to accept a media. Insert a piece of media into the carrier so that the tape door end of the cartridge goes in first. Again, using the front panel, select the appropriate key to close the mailslot door. In most cases, the library management software is used to open and close the mailslot door. The host computer handles this operation.

CAUTION

Do not attempt to load a media in the mailslot until the media carrier is extended through the open door. The door should never be opened manually.

Five Slot Magazine

The five slot bulk magazine allows the loading of five pieces of media at one time while the librari is on-line. To use the magazine:

1. Release the magazine from the library using the Release Magazine menu option on the front panel display. Refer to *Chapter 3, Menu System* for information.
2. Remove the magazine from the library.
3. Open the media catch lever.
4. Load media into the magazine.
5. Close the media catch lever.
6. Replace the magazine into the library.

Inside the Front Door

The front door makes accessible the power switch, the connector for the power cable, and the library interface connectors (SCSI connectors).

Power Connection

Route the power cable through the bottom of the machine to the power cable connector. Using the supplied cable restraint, attach the cable and secure to the library with the Phillips head screw provided.

Figure 8. Power Connection for V Series Libraries

The power cable can be plugged into a standard 120 volt to 240 volt wall outlet. The library system uses an auto-ranging power supply.

Do not use an extension cord. The unit must be located next to the AC outlet, and the outlet must be easily accessible. In the event an emergency power cutoff is required, pull the plug from the AC socket.

SCSI Connection

The library requires a host computer with a dedicated LVD/SE-SCSI host bus adapter. Power off the library and disconnect from the wall outlet before connecting the SCSI cable. Route the SCSI cable through the bottom of the library to the appropriate library SCSI connector.

NOTE

The SCSI buses are terminated inside the library. It is not necessary to use a terminator on the SCSI bus.

SCSI Cables

Plasmon recommends using SCSI cables that conform to SCSI-3 specifications with high density 68-pin connectors. The special design of the Plasmon V Series libraries allows a maximum external SCSI cable length of 12 meters (39 ft.) for the standard LVD interface, and 3 meters (9 ft.) for a SE interface.

Initial Power On

Turn on the power switch and close the front door.

The library takes a few minutes to initialize. When the process is completed, the front panel indicates that the library is on-line and ready for operation.

Host Computer

It may be necessary to reboot the host computer for it to recognize the library as a new device.

Some modifications to the host hardware or operating system may be necessary for it to recognize the library. These modifications may include patches, driver updates, or modifications to the configuration files. Please consult the host hardware or operating system documentation to see if any of these modifications are necessary. Then if necessary, contact the hardware or software vendor for the appropriate patch or update.

Space Planning

The library functions properly when sitting on a floor with no more than a 3/8" (0.9525cm) rise or fall over a 36" (91.44cm) run.

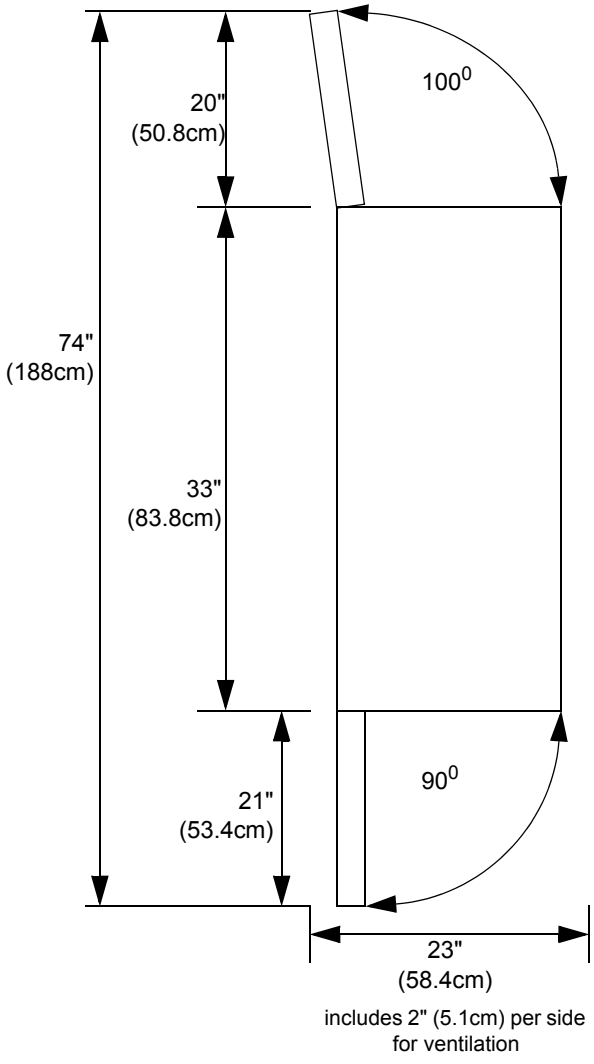

Figure 9. Space for V40 - V102

Identifying Storage Columns and Slots

Inside the rear door of each V Series library is a diagram of the slot numbering scheme for that library. Also, refer to the slot location diagrams on the following pages for slot numbering in different libraries as viewed through the rear door.

Each physical location capable of holding media is assigned a SCSI element address. The slot number is also the SCSI element address of a storage slot.

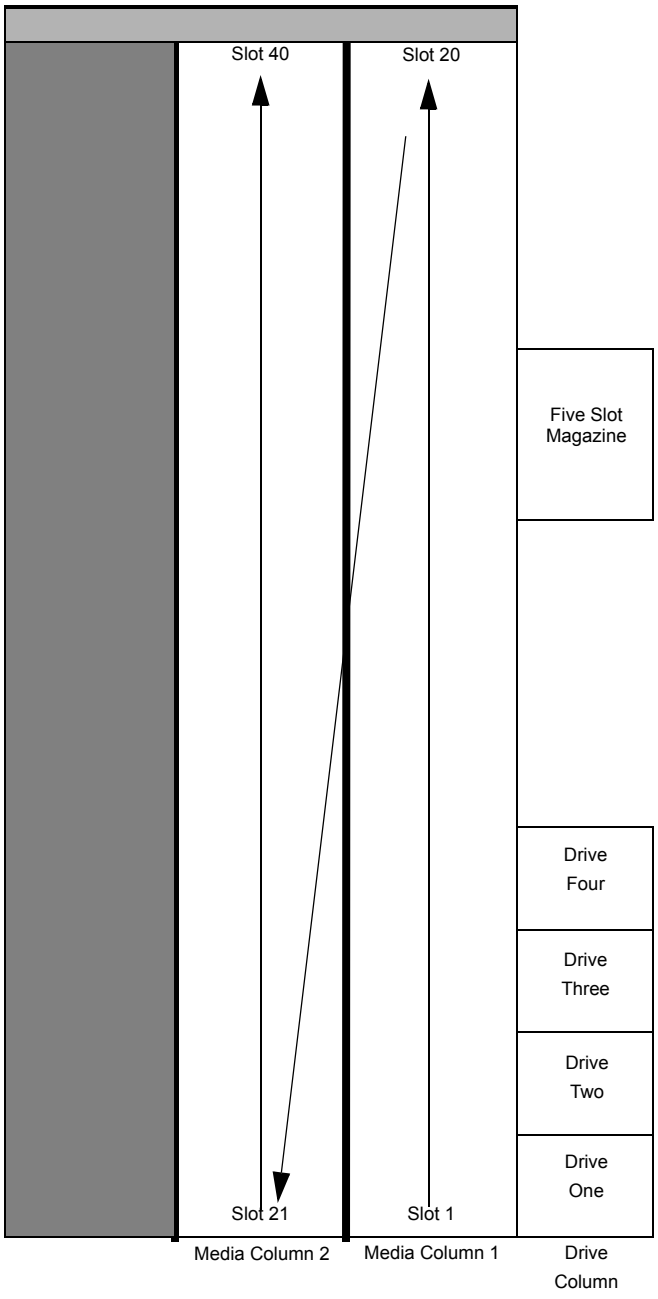

Figure 10. V40 Slot Configuration

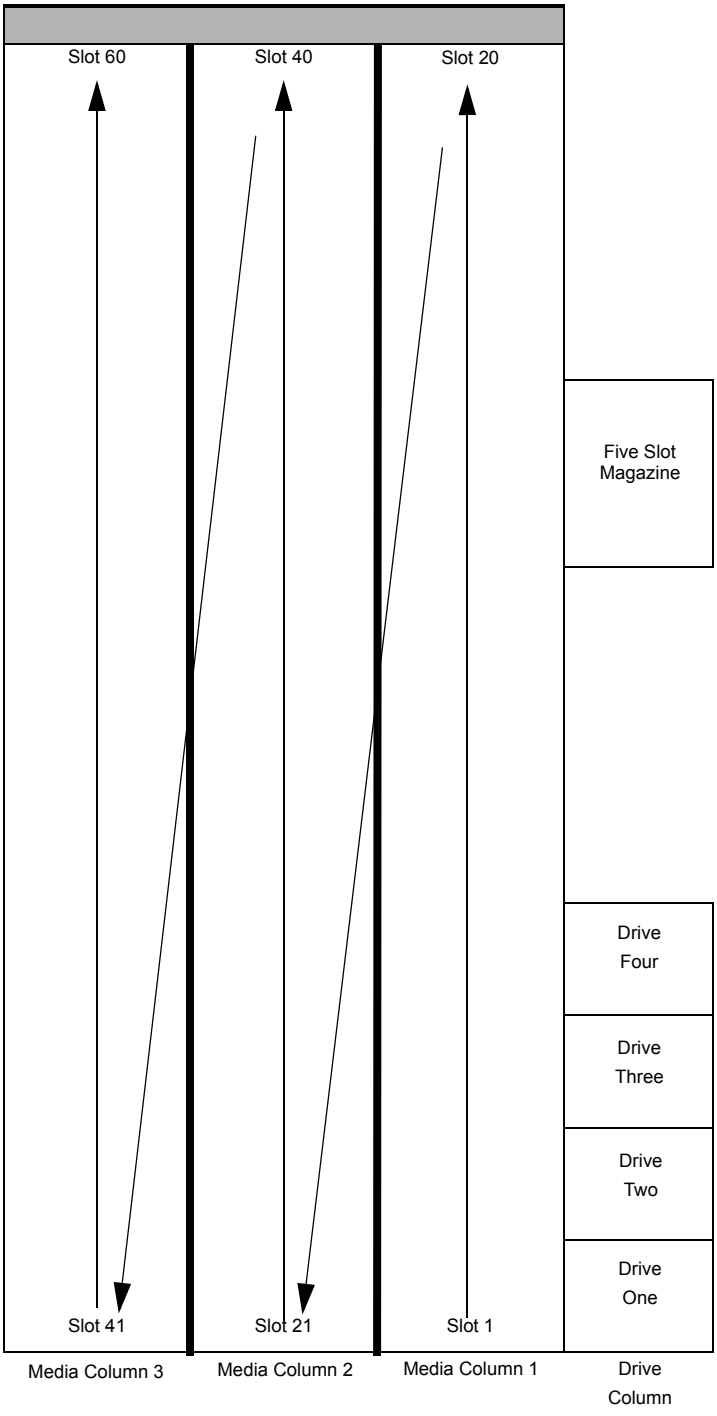

Figure 11. V60 Slot Configuration

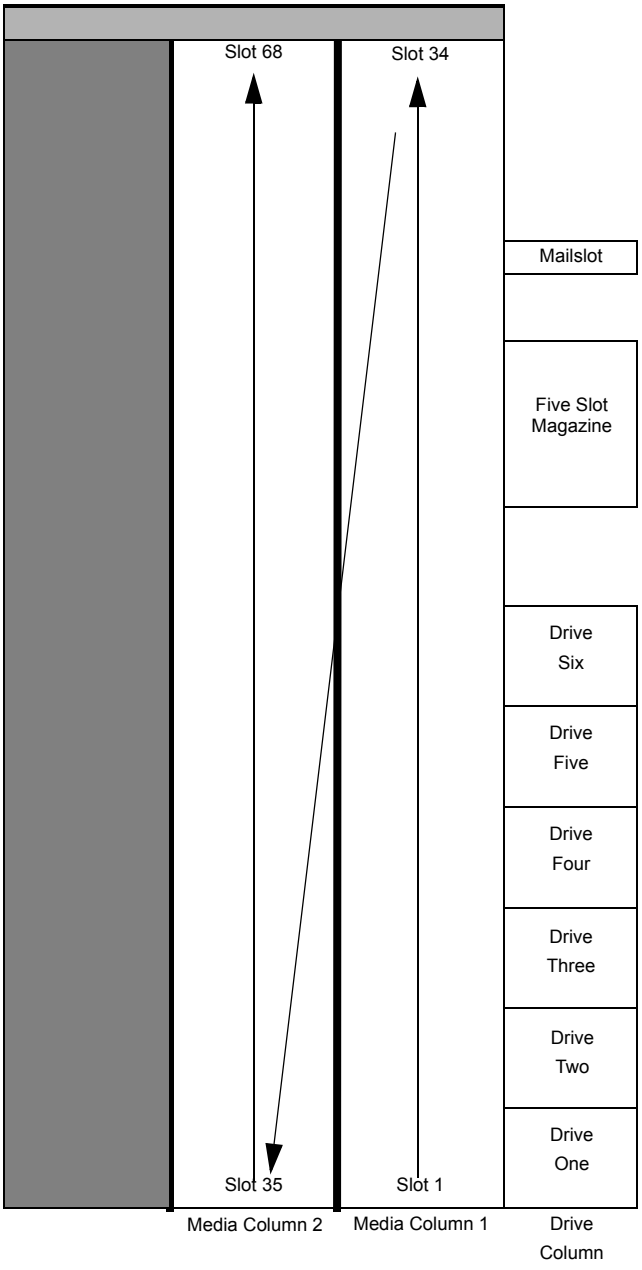

Figure 12. V68 Slot Configuration

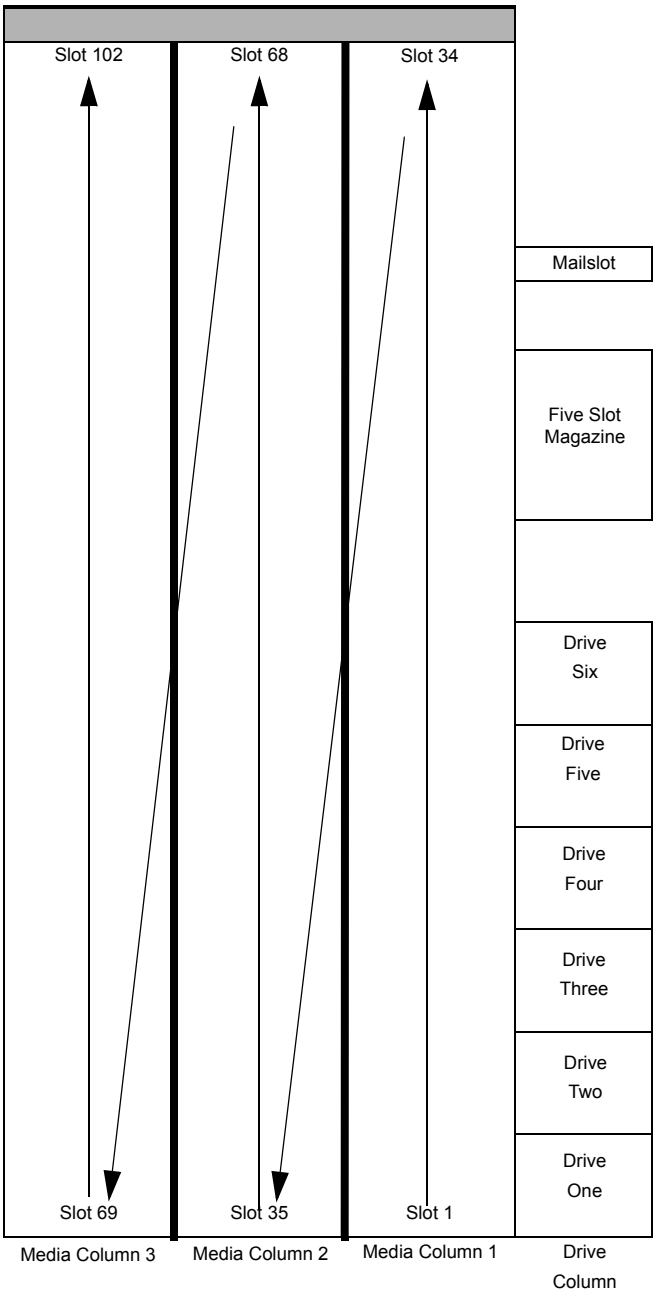

Figure 13. V102 Slot Configuration

V40 and V60 Stabilizer Plates

CAUTION

In order to comply with UL1950, these stabilizers must be installed (does not apply to rack mounted libraries).

The V40 and V60 ship with two stabilizer plates for each unit. The stabilizer plates prevent the V40 and V60 library models from tipping due to accidental force. Included in the kit are:

- two stabilizers
- six 8-32 UNC-2B screws
- six washers
- one $^{9}/_{64}$" hex wrench

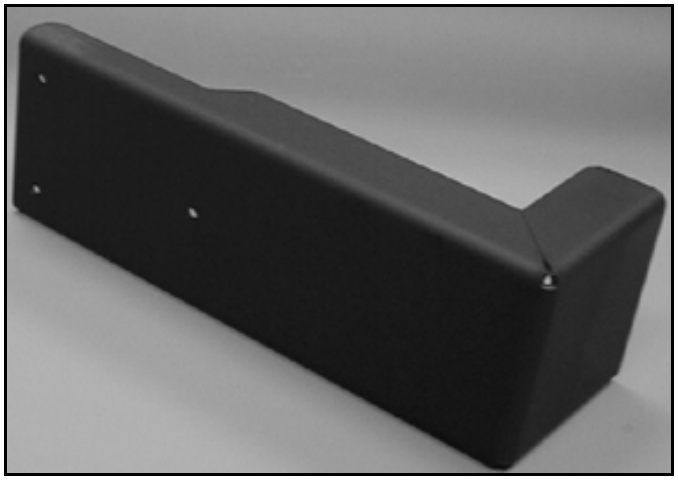

Figure 14. Stabilizer for V40 - V60

The stabilizers must be mounted one on each side of the library.

1. Position one of the stabilizers so it lines up with three threaded fasteners located on the bottom side of the library chassis as shown below.

Figure 15. Stabilizers Installed for V40 - V60

2. Choose one of the 8-32 UNC-2B screws and washer.
3. Manually start each screw and tighten with finger tension.
4. Use the $^{9}/_{64}$" wrench to tighten each one of the three screws. Make certain the screws are tight, and there is no play in the stabilizer.
5. Follow the above steps and attach the stabilizer on the other side of the library.

CAUTION

Remove the stabilizers prior to moving the library. Re-install stabilizers when the library arrives at a new location.

Rack Mount Guidelines

This section provides information for mounting a Plasmon library into an Electronics Industry Association (EAI 310-D) standard 19” / 483mm rack. The standard 19-inch rack must be a minimum of 36” (inches) deep to provide sufficient depth for the library. Plasmon recommends mounting the library at the bottom of the rack leaving 1.75” (1U) minimum space for cable routing. The library height is 43.3” / 116cm and uses 25U of a standard rack.

If the unit is installed in a closed or multi-rack assembly, refer to the following guidelines:

- The operation temperature of the rack environment may be greater than the ambient temperature. Be sure to install the unit in an environment that is compatible with the maximum rated ambient temperature. See *Appendix A Specifications*.
- When mounting the equipment in the rack, make sure mechanical loading is even to avoid a hazardous condition. The rack should safely support the combined weight of all equipment.
- When connecting the equipment to the supply circuit, check equipment nameplate ratings to avoid overloading circuits that may cause damage to over-current protection devices and supply wiring.
- Maintain reliable grounding for rack-mounting equipment. Pay particular attention to supply connections.
- Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the unit and to protect it from overheating, maintain a minimum 1 inch clearance on the top and sides.
- Allow sufficient air circulation or space between units when installed in a closed or multi-unit rack assembly because the operating ambient temperature of the rack environment might be greater than room ambient.
- The unit is designed to use a three pronged grounding type plug. Equipment grounding ensures safe operation. Do not defeat the grounding means and verify equipment is reliably grounded when mounted within a rack.

Required Tools

The following tools are required to install the rack mount assembly:

- Slotted screwdriver
- #2 phillips head screwdriver

Rack Mount Kit

Table 2. Rack Mount KIT Part Numbers/Descriptions

Part Number	Description
306249-000	Brackets, Angle (2)
306245-000	Brackets, Support (4)
306268-000	Cross Strap Support (1)
250194-006	Flat Head Socket Head Cap Screw, 10-32 x 3/8 (28)
250195-000	Retaining Nut, 10-32 (24)
202322-000	Button Head Cap Screw 10-32 x 3/8 (14)
202338-000	Nut, Retainer “J” Type 10-32 (6)
306250-000	Spacer Adapters (8)
250197-000	9/64 Allen Wrench
250196-000	1/8 Allen Wrench

Rack Mount Installation

As Shipped from Plasmon

1. Clip Retaining Nuts into the six slots in each of the four supplied brackets.

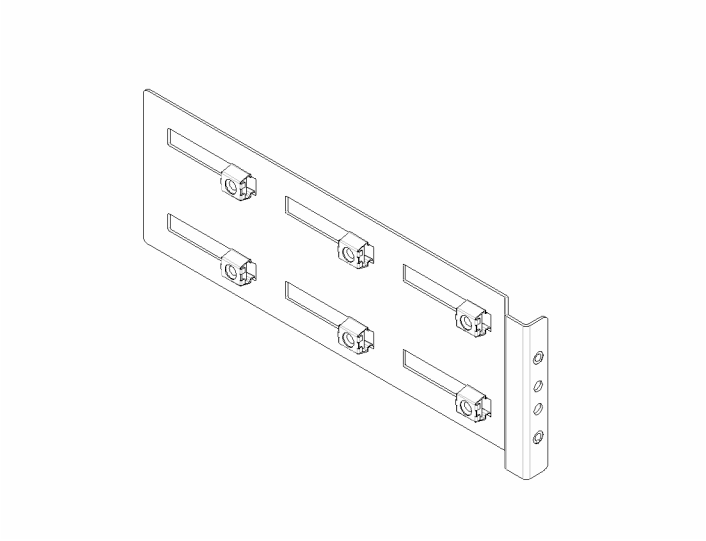

Figure 16. Rack Mounting Illustration (a)

2. Connect the two angle brackets to the rails using 24 Flat Head Socket Head Cap screws, 10-32 x 3/8. Do not fully tighten screws in steps 2-6 to allow for adjustments (if necessary).

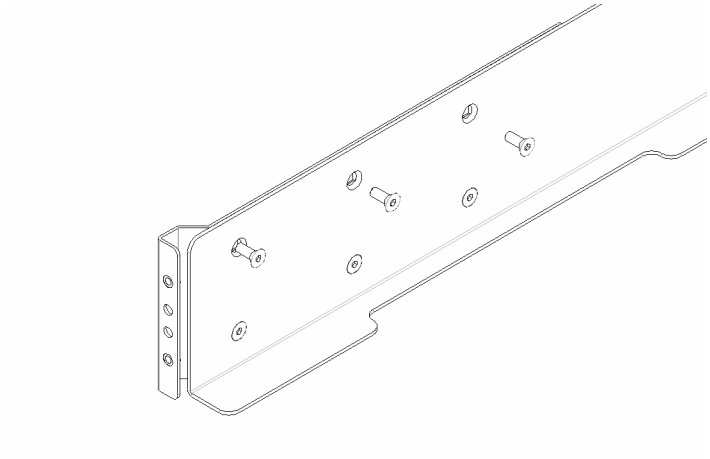

Figure 17. Rack Mounting Illustration (b)

3. Fasten the Cross Strap Support to the bottom of the rails using four Flat Head Socket Head Cap screws, 10-32 x 3/8.

4. Adjust the length of the angle brackets with support brackets so they correctly fit the depth of the rack.

5. Adjust the Cross Strap Support so it is perpendicular to the angle brackets with support brackets.

6. Fasten the rails and cross strap support assembly to the rack as low as possible using 14 10-32 x 3/8 Cap screws, being sure to leave enough space so a SCSI cable can be passed between the bottom of the library and the base of the rack (approximately 1U or 1.75”).

NOTE

Installing the rails as low as possible maintains a low center of gravity and helps avoid tipping.

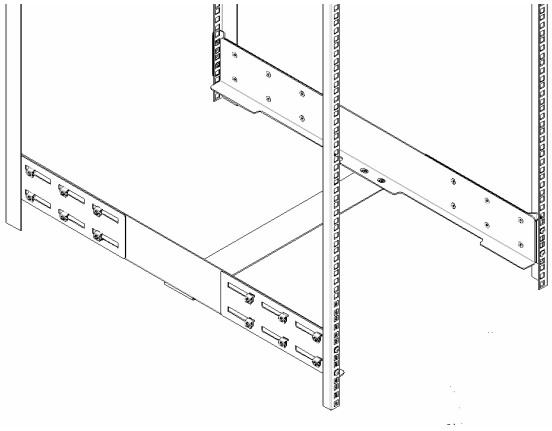

Figure 18. Rack Mounting Illustration (c)

7. Tighten all Flat Head Socket and Cap screws.
8. Using a mechanical lift, lift the library off the ground to allow removal of the library's casters and stabilizers (if equipped).
9. Remove the 16 fasteners connecting the casters to the library.
10. Slide the library approximately 3/4 of the way into the rack.
11. Snap six "J" Type Retainer nuts onto the front of the rack so they line up with the holes in the left and right side skin flanges.

NOTE

Some racks come equipped with square openings. If the rack has square openings, use the six spacer adapters provided.

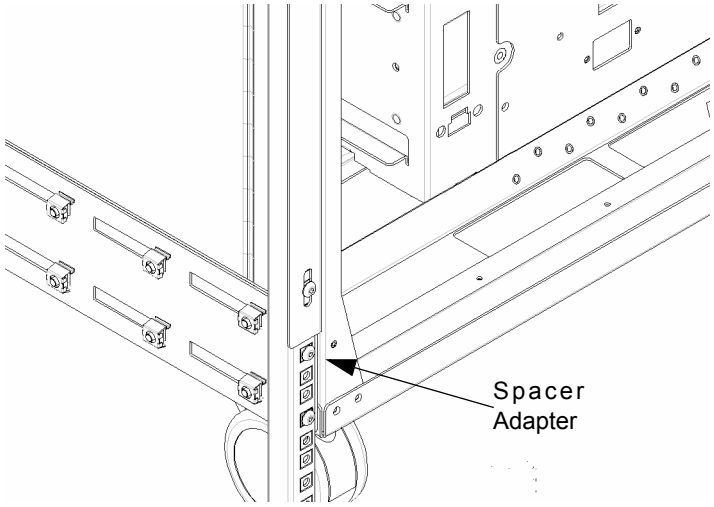

Figure 19. Rack Mounting Illustration (d)

12. Slide library the rest of the way into the rack.
13. Using six J Clip nuts, secure the library to the rack.

Free Standing to Rack Mount Library Conversion

1. Open the library's rear access door.
2. Using a #2 Phillips Head screwdriver, remove the fasteners connecting the hinges to the library.
3. Using a #2 Phillips Head screwdriver, remove the 12 screws fastening the left and right side skins to the library. There are six screws on each side.
4. Using a #2 Phillips Head screwdriver, remove the eight screws fastening the top skin to the library.
5. Install new side skins using 24 Flat Head screws.
6. Install new rear skin using six Flat Head screws.
7. Perform *As Shipped From Plasmon* Steps 1-13, listed above.

Packing Instructions (V40 - V102)

This section is provided in case it is necessary to ship the library back to Plasmon. These procedures must be followed.

CAUTION

Plasmon libraries must be shipped in the original packaging. Shipping a unit in anything other than the manufacturers packaging voids the warranty.

The library must be parked before packing the system (refer to the SetUp Library menu in *Chapter 3 Menu System*). Remove all media before shipping the library. The storage element detents are not strong enough to hold the media during shipment.

Follow these steps to pack the library for shipping:

1. When powered off the media transport element (MTE) moves to bottom of library. Position it as shown in the picture below.
2. Place foam support under MTE, and attach foam tube to one of the lift bars as shown in the picture below.

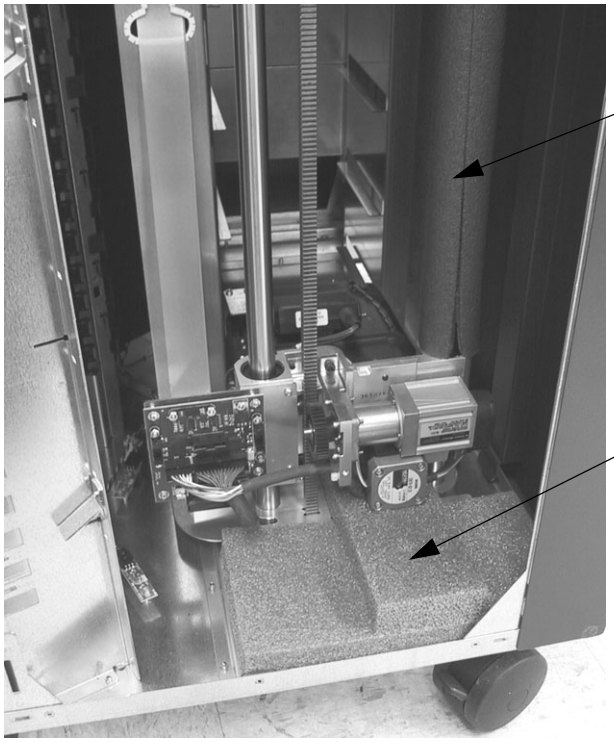

Figure 20. Packing the V40 - V102 Libraries (a)

3. Place skid ramp on floor in front of packaging skid. Connect velcro on ramp to velcro on packaging skid.

Figure 21. Packing the V40 - V102 Libraries (b)

4. Using two people, roll library onto packaging skid. Library's front door goes onto skid first. Push on bottom of library when rolling onto packaging skid.
5. Place foam block under rear of library as shown below.

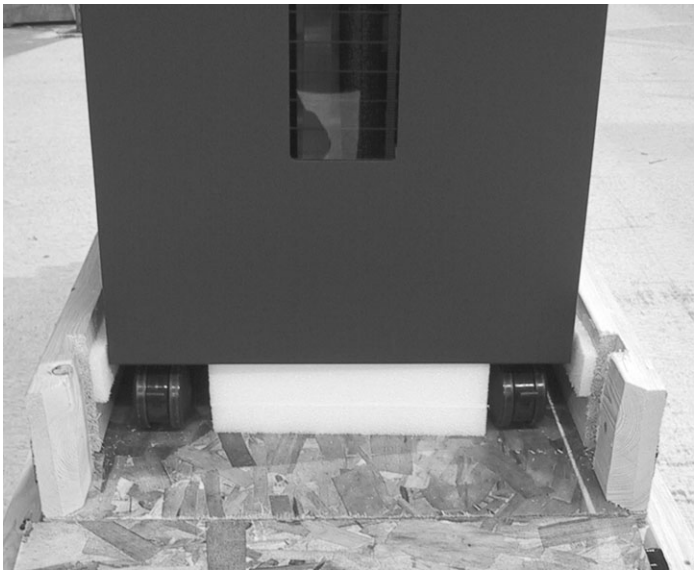

Figure 22. Packing the V40 - V102 Libraries (c)

6. Insert back edge-board of skid into slots with foam protected side toward library.

Figure 23. Packing the V40 - V102 Libraries (d)

7. Cover the library with the anti-static bag.

Figure 24. Packing the V40 - V102 Libraries (e)

8. Remove ramp from skid and place upright in slot provided behind library. Close velcro fasteners on each side.

Figure 25. Packing the V40 - V102 Libraries (f)

9. Place top foam over library, and fit in place.

Figure 26. Packing the V40 - V102 Libraries (g)

10. Place cardboard lid on top of foam.

Figure 27. Packing the V40 - V102 Libraries (h)

11. Place cardboard box over the library with flaps on top.

Figure 28. Packing the V40 - V102 Libraries (i)

12. Finally, tape box closed and strap box to skid for shipping.

CHAPTER 3
MENU SYSTEM

Navigating the Menu System

The Plasmon V Series library modes and functions are controlled using four selection buttons located on the front panel. A Liquid Crystal Display (LCD), located directly above the buttons, provides system status and other important information:

Figure 29. LCD Display Format

The **description line** displays the number and name of the mode or test. An ellipsis (...) following a name indicates that the selection contains submenus.

The **selection button indicators** display the function of the four buttons located directly below the indicator. A dash above a button means that no function is associated with this key. The following *LCD Symbols* table provides an explanation of each symbol.

Table 3. LCD Symbols

LCD Symbol	Meaning
	Enter a menu selection
	Exit a menu selection
	Change a mode selection
	Switch to display scroll mode
	Confirm a selection
	Decrement a numeric value or scroll display up
	Increase a numeric value
	Go to the previous menu item
	Go to the next menu item
	Open the mailslot
	Display a list of menu items
	Run a motor or execute a function
	Indicates a drive is turned off
	Indicates a media exists in an element
	Indicates the element is empty

Power Up Menu Options

The following operations can be performed at the initial power up stage:

- Entering the library's main menu system
- Opening or closing the mailslot
- Viewing error information

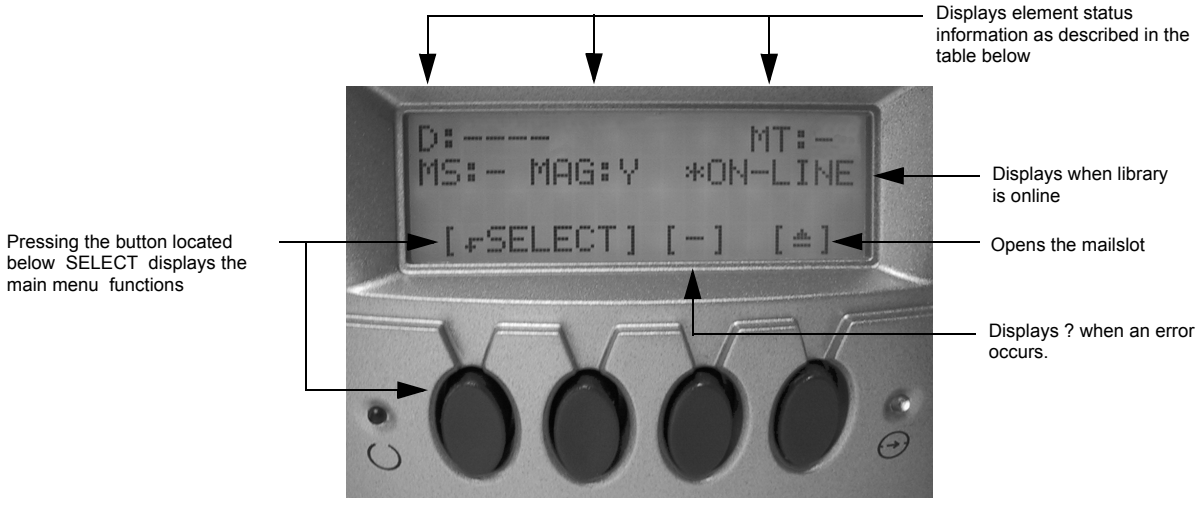

Figure 30. Power Up LCD Display

Table 4. Power Up LCD Symbols

Symbol	Meaning
D	Drive status (drive present, media present)
MT	Media transport element status (media present)
MS	Mailslot status (media present)
MAG	10 slot magazine installed (Y or N)
-	Empty element or button not used
▟	Media in element

Main Menu Overview

The V Series library LCD menu system starts with seven top-level options. To cycle through the options at any level press [SELECT]. To enter a selection press [ ].

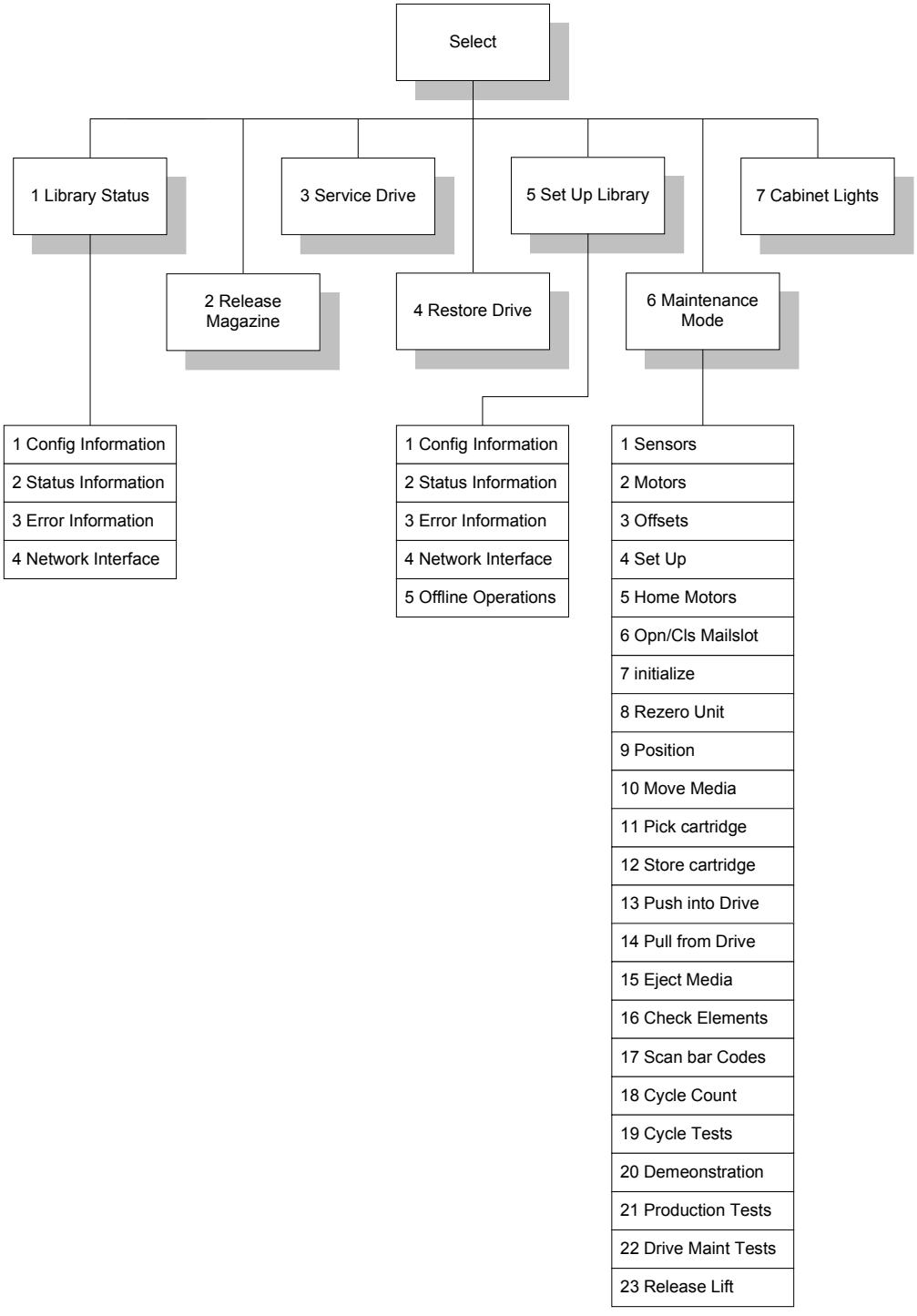

Figure 31. Main Menu Overview

Table 5. Main Menu Selections

Menu Selection	Description
1 Library Status	Allows viewing only of library settings. To make changes, use the Set Up menu.
2 Release Magazine	Use to release the magazine from the library.
3 Service Drive	Use to remove power from the drive to allow removal or replacement. For password protected operations, the factory default password is "AAAA".
4 Restore Drive	Use to restore power to the drives after removal or replacement. For password protected operations, the factory default password is "AAAA".
5 Set Up Library	Allows viewing and changing of library settings. When performing operations from the Set Up menu, the library is taken off-line.
6 Maintenance Mode	Allows testing, setting up, or configuring the library. When performing operations from the Maintenance Mode menu, the library is taken off-line. These operations are reserved for Plasmon authorized service personnel. For password protected operations, the factory default password is "AAAA".
7 Cabinet Lights	Use to turn the cabinet lights on or off.

Library Status Menu Overview

Use the Library Status menu to view the library's status only. To make changes to the library's status, use the Set Up menu.

The figure below shows the Library Status menu options.

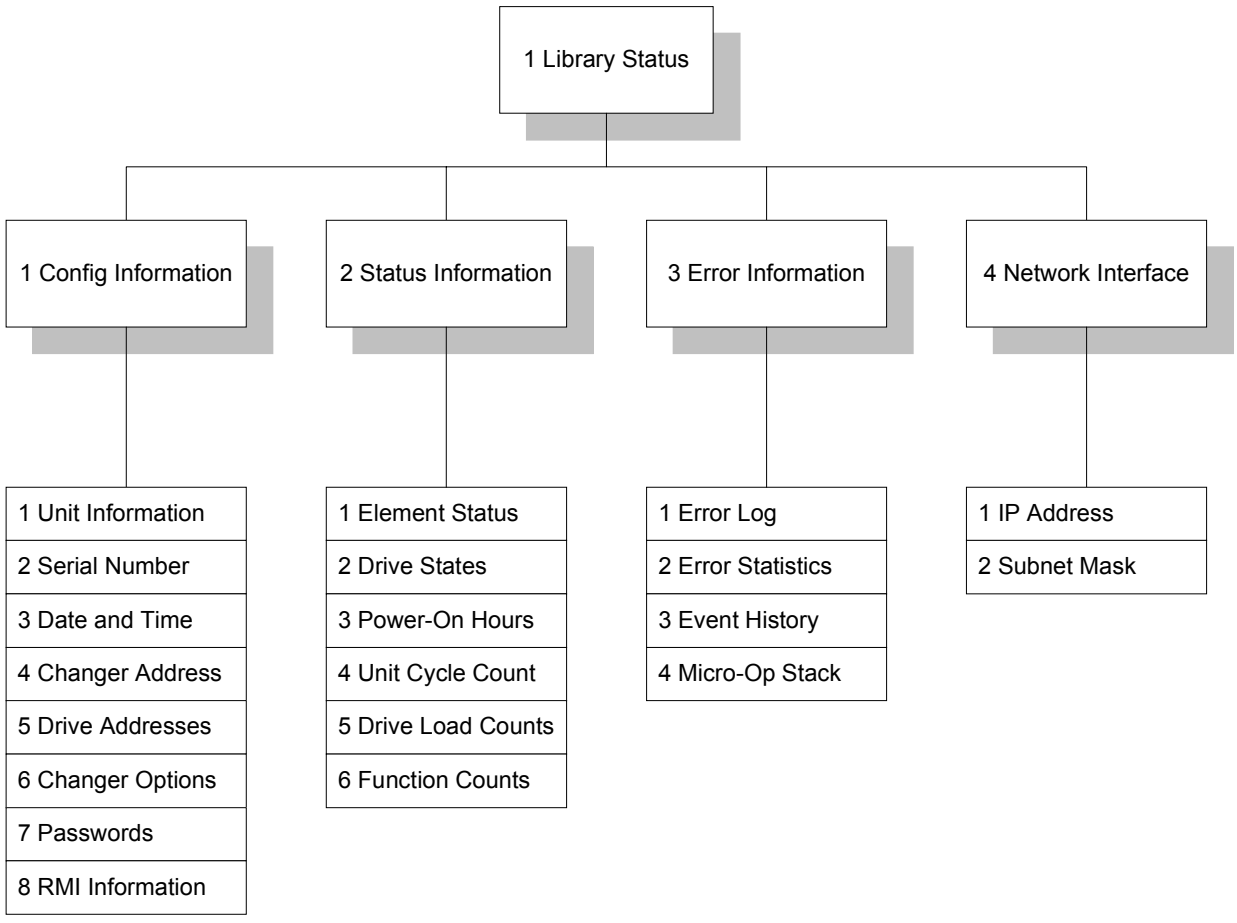

Figure 32. Library Status Menu Options

Table 6. Library Status Menu Selections

Menu Selection	Description
1 Config Information	Allows viewing only of library configuration settings.
1 Unit Information	To view the storage slot count, drive count, and firmware revision.
2 Serial Number	To view the serial number assigned to the library.
3 Date and Time	To view the current date and time settings.
4 Changer Address	To view the changer SCSI ID.
5 Drive Addresses	To view individual drive SCSI IDs.
6 Changer Options	To view changer options: Changer Ejects (Y or default N) Wait on Load (Y or default N) Emulation Type (0 or default 1) Enable Mailslot (Y or default N) Enable Magazine (Y or default N) Enable BC Reader (default Y or N) Bar Code Type (default1 or 2) Enable All Uattn (Y or default N)
7 Passwords	This option is not available when library is online.
8 RMI Information	Not yet supported in firmware.
2 Status Information	Allows viewing only of library status.
1 Element Status	To view which elements (slots, drives, pickers, or I/O stations) are populated by media.
2 Drive States	To view the power on/off state of a drive.
3 Power-On Hours	To view total hours of power to library. Useful for preventive maintenance. Cannot be reset.
4 Unit Cycle Count	To view total cycle count since first startup. Cannot be reset.
5 Drive Load Counts	To view total drive loads since last reset of count.
6 Function Counts	To view total function counts since last reset of count. Lift Up/Down Count Picker In/Out Count Pivot L/R Col Count Mailslot Open Count Cumul Up/Down Dist Cumul In/Out Dist Cumul L/R Rotat Cumul Mag Rels Count

Menu Selection	Description
3 Error Information	Allows viewing only of library error information.
1 Error Log	To view a chronological list of last ten errors since log was last cleared.
2 Error Statistics	To view a list of the ten most frequent errors since list was last cleared.
3 Event History	To view the SCSI command event history since it was last reset. Only SCSI commands which affect library operations are recorded.
4 Micro-Op Stack	To view a list of operations performed for the last failing SCSI command. These micro operations include position, position and flip, pick, store, load, and unload. The list includes forward and backward operations (media movement, and undo and retry for attempted failure recovery). This log is cleared whenever the system is initialized.
4 Network Interface	Allows viewing only of library network interface information.
1 IP Address	To view the IP address set for the library.
2 Subnet Mask	To view the subnet mask set for the library.

Set Up Library Menu Overview

Use the Set Up Library menu to change the library's status. When performing operations in the Set Up Library menu, the library is taken off-line.

The figure below shows the Set Up Library menu options.

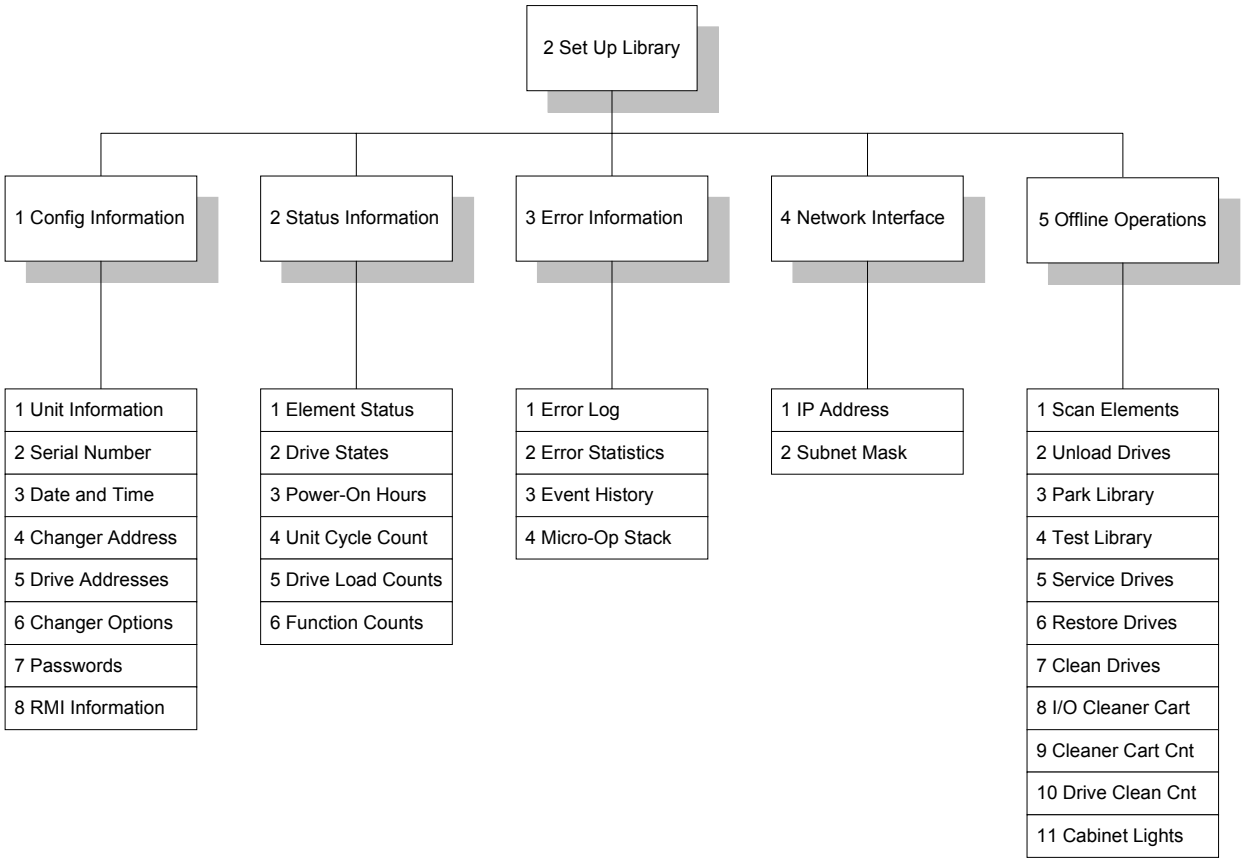

Figure 33. Set Up Library Menu Options

Table 7. Set Up Library Menu Selections

Menu Selection	Description
1 Config Information	Allows viewing and editing of library configuration settings.
1 Unit Information	To view the storage slot count, drive count, and firmware revision.
2 Serial Number	To view the serial number assigned to the library.
3 Date and Time	To view/edit the current date and time settings.
4 Changer Address	To view/set the changer SCSI ID.
5 Drive Addresses	To view/set individual drive SCSI IDs.
6 Changer Options	To view/edit changer options:
Changer Ejects	To enable library control to eject media from the drives.
Wait on Load	To cause library to wait until a drive spins up and is ready before the next command is executed.
Emulation Type	To emulate different libraries for software compatibility.
Enable Mailslot	To turn mailslot on for use.
Enable Magazine	To turn mailslot on for use.
Enable BC Reader	To turn barcode reader on for use.
Bar Code Type	To select barcode type I or II according to label type.
Enable All Uattn	
7 Passwords	To set or change passwords. To remove password protection from a menu selection, press the check mark without entering any letters. The factory default password is AAAA. If a password is forgotten or lost, please contact Plasmon support.
8 RMI Information	Not yet supported in firmware.
2 Status Information	Allows viewing/editing of library status.
1 Element Status	To view/edit which elements (slots, drives, pickers, or I/O stations) are populated by media. Individual slot status can be set to full or empty.
2 Drive States	To view a drive's on/off state.
3 Power-On Hours	To view total hours of power to library. Useful for preventive maintenance. Cannot be reset.
4 Unit Cycle Count	To view total cycle count since first startup. Cannot be reset.
5 Drive Load Counts	To view/reset total drive loads since last reset of count.

Menu Selection	Description
6 Function Counts	To view/reset total function counts since last reset of count. Lift Up/Down Count Picker In/Out Count Pivot L/R Col Count Mailslot Open Count Cumul Up/Down Dist Cumul In/Out Dist Cumul L/R Rotat Cumul Mag Rels Count - *not on G64 or G104*
3 Error Information	Allows viewing/clearing of library error information.
1 Error Log	To view/clear a chronological list of last ten errors since log was last cleared. The first on the list is the most recent.
2 Error Statistics	To view/clear a list of the ten most frequent errors since list was last cleared.
3 Event History	To view/clear the SCSI command event history since it was last reset. Only SCSI commands which affect library operations are recorded.
4 Micro-Op Stack	To view a list of operations performed for the last failing SCSI command. These micro operations include position, position and flip, pick, store, load, and unload. The list includes forward and backward operations (media movement, and undo and retry for attempted failure recovery). This log is cleared whenever the system is initialized. This error should be reported to Plasmon for decoding.
4 Network Interface	Allows set up of RMI (Remote Management Interface).
1 IP Address	To view/edit the IP address set for the library RMI interface.
2 Subnet Mask	To view/edit the subnet mask set for the library RMI interface.
5 Offline Operations	Allows basic offline operations.
1 Scan Elements	To scan all elements.
2 Unload Drives	To unload the drives.
3 Park Library	To park the picker before shipping or moving the library. Also, remove all media before moving the library.
4 Test Library	To perform basic sensor and motor tests.
5 Service Drives	To turn a drive off and temporarily terminate the SCSI bus for drive replacement.
6 Restore Drives	To turn a drive on and remove temporary SCSI bus termination after drive replacement.
7 Clean Drives	
8 I/O Cleaner Cart	
9 Cleaner Cart Cnt	

Menu Selection	Description
10 Drive Clean Cnt	
11 Cabinet Lights	To turn cabinet lights on and off.

Maintenance Mode Menu Overview

Use the Maintenance Mode menu to perform tests on, set up, or configure the library. When performing operations in the Maintenance Mode Library menu, the library is taken off-line. A password is required to enter this mode, or set dip switch one on the main controller to "on" and cycle power.

The following sequence of figures shows the Maintenance Mode menu options.

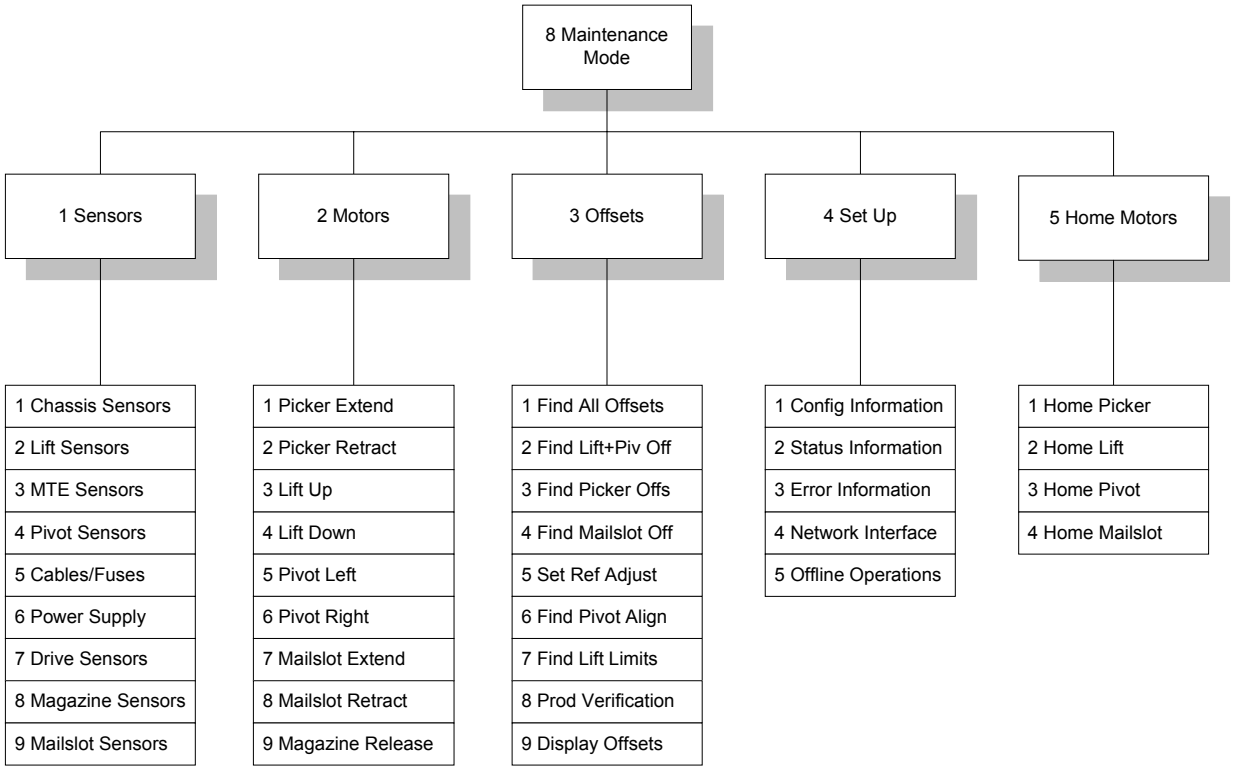

Figure 34. Maintenance Mode Menu Options 1 - 5

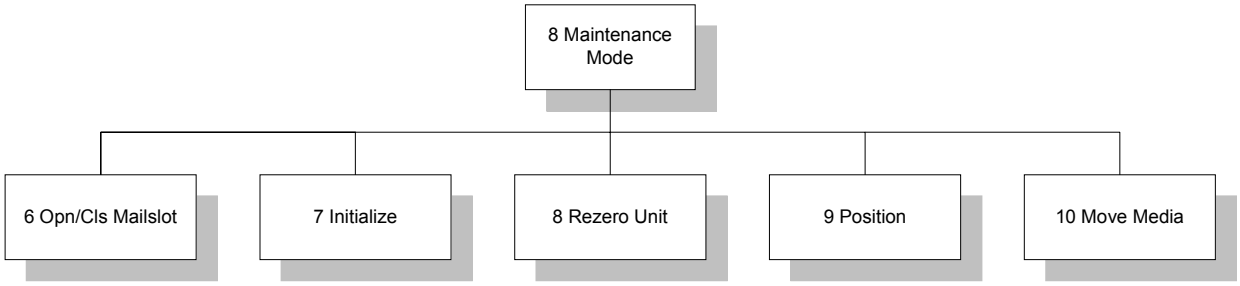

Figure 35. Maintenance Mode Menu Options 6 - 10

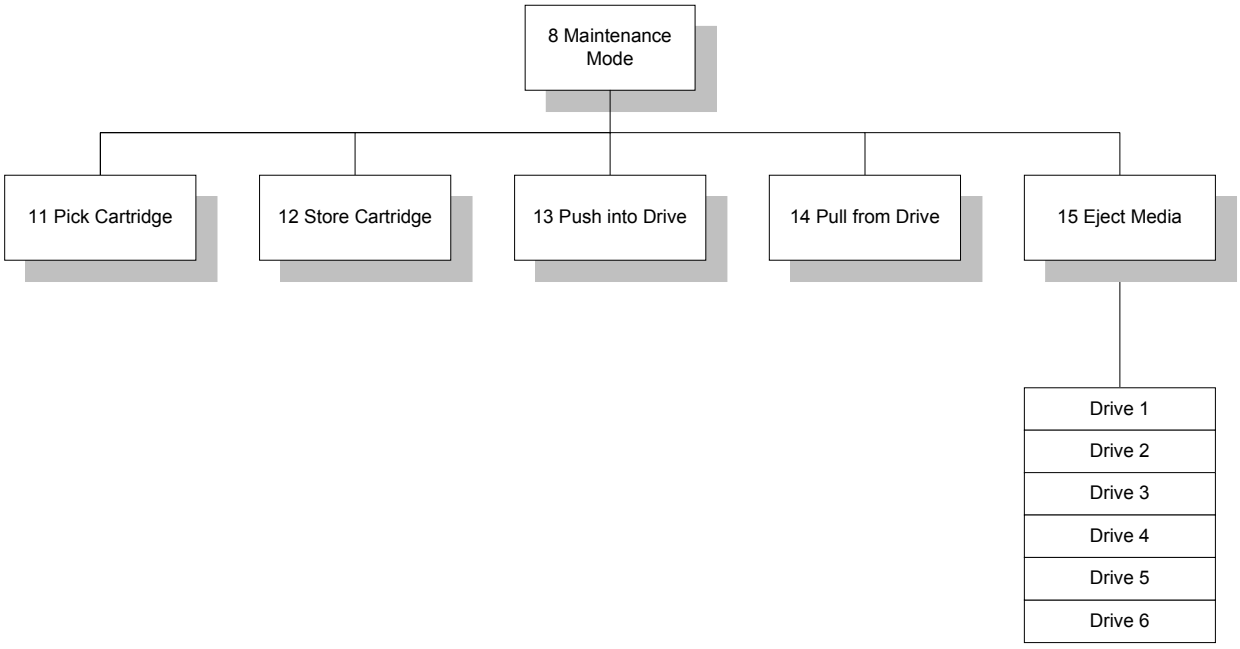

Figure 36. Maintenance Mode Menu Options 11 - 15

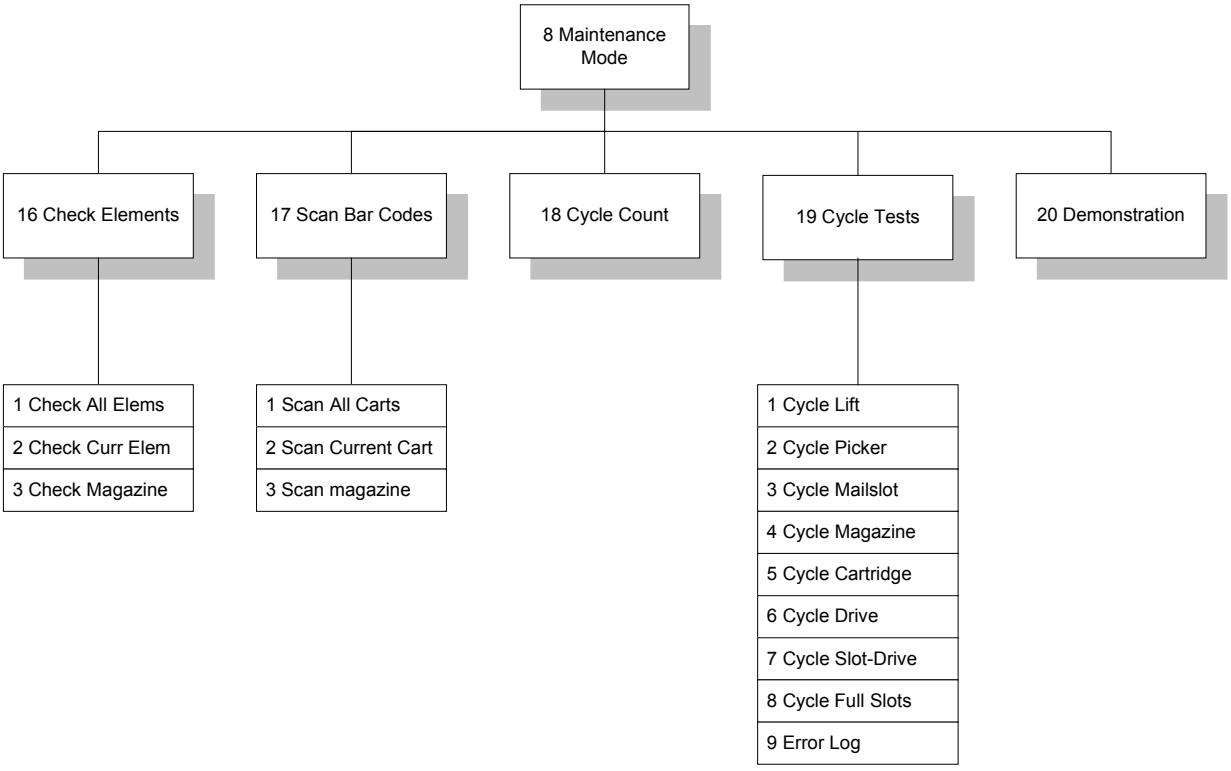

Figure 37. Maintenance Mode Menu Options 16 - 20

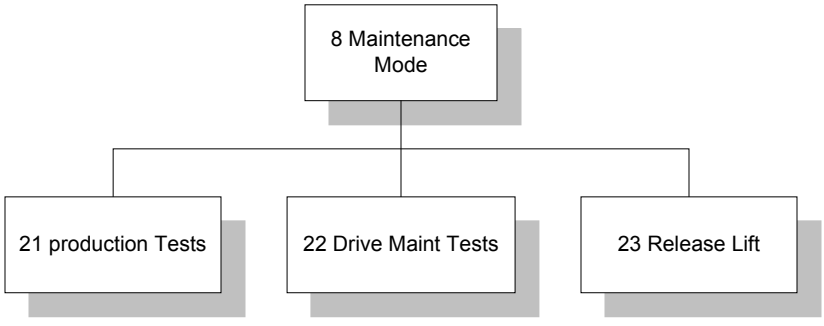

Figure 38. Maintenance Mode Menu Options 21 - 23

Table 8. Maintenance Mode Menu Selections

Menu Selection	Description
1 Sensors	Allows selection of individual sensors for manual testing. The state indicator on the LCD display is one when OPTO is blocked, and zero when OPTO is unblocked. There is also an audible tone each time the sensor changes state.
1 Chassis Sensors	
Vert Path-All Cols	All vertical path sensors can be checked here.
Vert Path-Col 1	To test column 1 individually.
Vert Path-Col 2	To test column 2 individually.
Vert Path-Col 3	To test column 3 individually.
Vert Path-Col 4	To test column 4 individually.
Vert Path-Col 5	To test column 5 individually.
Vert Path-Col 6	To test column 6 individually.
Vert Path-Col 7	To test column 7 individually.
Rear Door Open	Detects whether rear door is open or closed.
Reference Sensor	Sets the reference point for all the offset adjustments
Main Controller SCSI Terminator Power	Detects internal LVD SCSI cable term power connecting to the main controller SCSI adapter. 1 = OK.
2 Lift Sensors	
Lift Home	Detects home position for the MTE.
Lift Current	Detects current position for the MTE.
3 MTE Sensors	
Picker Home	Detects home position of picker 1.
Reference Sensor	Checks whether the Auto Offset sensor, emitter, and receiver are functional.
Auto Offset Sensor	To perform auto offsets.
Media Scan Opto	To detect media.
Media Scan Sensor	To detect media. 1 = media present. Located at the front of the MTE, used only during media scan.
4 Pivot Sensors	
Pivot Home	Detects home position of pivot assembly.
Pivot Align	Checks the sensor used to align the pivot with the column.

Menu Selection	Description
5 Cables/Fuses	
CJ4: Pivot/Lift/MTE	Monitors connection of pivot cable at CJ4 on main controller board and continuing through the pivot, lift, and MTE interface boards. 1 = proper operation
CJ5: VP Sensor Enc	Monitors connection of cable from CJ5 on main controller board to the VP interface board. 1 = proper operation.
CJ7: Interlock Ifc	Monitors connection of cable from CJ7 on main controller board to the door interlock and reference sensor (for auto offsets). 1 = proper operation.
F1: CAN Bus 24V	Monitors fuse 1 which powers the CAN bus interface at CJ3 with +24 volts on the main controller board. 1 = proper operation.
F2: CAN Bus 5V	Monitors fuse 2 which powers the CAN bus interface at CJ3 with +5 volts on the main controller board. 1 = proper operation.
F3: Lift Cable 24V	Monitors fuse 3 which powers the pivot, lift, and MTE interface at CJ4 with +24 volts on the main controller board. 1 = proper operation.
F4 Lift Cable 5V	Monitors fuse 4 which powers the pivot, lift, and MTE interface at CJ4 with +5 volts on the main controller board. 1 = proper operation.
F5: VP Dec Bd 5V	Monitors fuse 5 which powers the VP decoder interface at CJ5 with +5 volts on the main controller board. 1 = proper operation.
F6: MC SCSI Bd 5V	Monitors fuse 6 which powers the MC SCSI adapter interface connecting at CJ8 with +5 volts on the main controller board. 1 = proper operation.
F9: Ext SCSI Bd 5V	Monitors fuse 9 which powers the SCSI external interface boards connecting at CJ12 with +5 volts on the main controller board. 1 = proper operation.
F10: Lift Motor 24V	Monitors fuse 10 which powers the lift motor driver IC with +24 volts on the main controller board. 1 = proper operation.
F11: Steppers 24V	Monitors fuse 11 which powers all stepper motor ICs with +24 volts on the main controller board. 1 = proper operation.
6 Power Supply	
5V Supply	Displays voltage from the 5 volt power supply.
12V Supply	Displays voltage from the 12 volt power supply.
24V supply	Displays voltage from the 24 volt power supply.
CJ10: Power Supply IFC	Monitors cable connection from CJ10 on the main controller board to the power distribution board (power supply monitor interface cable). 1 = proper operation.
7 Drive Sensors	
Drive *n*	Select drive to check sensors.

Menu Selection	Description
8 Magazine Sensors	
Magazine in Place	Detects that magazine is present.
Magazine Latched	Detects that Magazine is properly latched.
CJ8: Solenoid Cable	Monitors cable connection fromCJ8 on magazine/mailslot board to the magazine sensors and solenoid. 1 = proper operation.
Fuse F3: Solenoid	Monitors fuse 3 which powers the solenoid with +24 volts for the magazine release mechanism. 1 = proper operation.
9 Mailslot Sensors	
Mailslot Open	Detects mailslot open.
Mailslot Closed	Detects mailslot closed.
Media Inserted	Detects presence of media in mailslot via the Media Present sensor.
CJ4: Sensors Cable	Monitors cable connection from CJ4 on magazine/mailslot board to the mailslot sensors. 1 = proper operation.
Fuse F2: Mslot Motor	Monitors fuse 2 which powers the mailslot stepper motor with +24 volts. 1 = proper operation.
2 Motors	
1 Picker Extend	To move picker forward.
2 Picker Retract	To move picker backward.
3 Lift Up	To move lift upward.
4 Lift Down	To move lift downward.
5 Pivot Left	To rotate pivot to the left.
6 Pivot Right	To rotate pivot to the right.
7 Mailslot Extend	To extend mailslot.
8 Mailslot Retract	To retract mailslot.
9 Magazine Release	To cause solenoid to release magazine.
3 Offsets	
1 Find All Offsets	To find all offsets and automatically set the correct offset alignments.
2 Find Lift+Piv Off	To find lift and pivot offsets and automatically set the correct offset alignments.
3 Find Picker Offs	To find picker offsets and automatically set the correct offset alignments.
4 Find Mailslot Off	To find mailslot offsets and automatically set the correct offset alignments.
5 Set Ref Adjust	Not applicable. Used for preproduction models.
6 Find Pivot Align	To find pivot alignment and automatically set the correct alignment.

Menu Selection	Description
7 Find Lift Limits	To find the lift limits.
8 Prod Verification	To verify that all offsets are within specifications.
9 Display Offsets	To display offset values.
4 Set Up	Allows access to the Set Up Library mode if Maintenance mode was entered using the DIP switch on the main controller board.
1 Config Information	See *Set Up Library Menu* section.
2 Status Information	See *Set Up Library Menu* section.
3 Error Information	See *Set Up Library Menu* section.
4 Network Interface	See *Set Up Library Menu* section.
5 Offline Operations	See *Set Up Library Menu* section.
5 Home Motors	
1 Home Picker	To move picker to home position, and verify sensor function.
2 Home Lift	To move lift to home position, and verify sensor function.
3 Home Pivot	To move pivot to home position, and verify sensor function.
4 Home Mailslot	To move mailslot to home position, and verify sensor function.
6 Opn/Cls Mailslot	Allows opening mailslot by pushing ⁂ key. Push again to close mailslot.
7 Initialize	To initialize the library. This option should be used before running any tests.
8 Rezero Unit	To return all media to original storage locations. This option should be used before running any cycle tests.
9 Position	To move the MTE to a new position.
10 Move Media	To move media to a new location.
11 Pick Media	To cause MTE to pick a media. MTE must be located in front of a storage slot with a media, or it just goes through the motions.
12 Store Media	To cause MTE to place a media in a storage slot. MTE must be located in front of an empty slot, and must have a media, or it just goes through the motions.
13 Push into Drive	To cause MTE to push a media into a drive. MTE must be located in front of an empty drive, and must have a media, or it just goes through the motions.
14 Pull from Drive	To cause MTE to pull a media from a drive. MTE must be located in front of a loaded drive, or it just goes through the motions.
15 Eject Media	To eject media from a selected drive.
1 Drive 1	To select drive.
2 Drive 2	To select drive.

Menu Selection	Description
3 Drive 3	To select drive.
4 Drive 4	To select drive.
5 Drive 5	To select drive.
6 Drive 6	To select drive.
16 Check Elements	To check empty/full status of elements.
1 Check All Elems	To check empty/full status of all elements.
2 Check Current Elem	To check empty/full status of current elements.
3 Check Magazine	To check empty/full status of magazine.
17 Scan Bar Codes	To scan bar codes.
1 Scan All Carts	To scan bar codes on all media.
2 Scan Current Cart	To scan bar code on current media.
3 Scan Magazine	To scan bar codes on media in magazine.
18 Cycle Count	To view/reset number of cycles executed in Maintenance mode. Reset to zero by pushing the ?? key.
19 Cycle Tests	To perform cycle tests. Press the ◘ key to stop test.
1 Cycle Lift	To cycle lift. Moves lift up and down, and positions it at random locations. LCD panel displays locations and cycle count.
2 Cycle Picker	To cycle picker in and out.
3 Cycle Mailslot	To cycle mailslot open and closed. Test can be set to cycle between 0 and 1000 times in increments of 5.
4 Cycle Magazine	To cycle magazine door open and closed. Test can be set to cycle between 0 and 1000 times in increments of 5.
5 Cycle Media	To cycle a media.
6 Cycle Drive	To cycle drive.
7 Cycle Slot-Drive	To cycle media between a slot and a drive.
8 Cycle Full Slots	To cycle media through all slots.
9 Error Log	
20 Demonstration	To place library in demonstration mode.
21 Production Tests	Not applicable. For use on factory production floor only.
22 Drive Maint Tests	
23 Release Lift	To remove the lift motor voltage so lift assembly drops slowly.

APPENDIX A
SPECIFICATIONS

Overall Library Specifications

The following table provides information about the Plasmon V Series LTO Ultrium tape libraries. These specifications are subject to change without notice.

Table 9. V Series Library Specifications

Specification	V40	V60	V68	V102
Library Capacity (native)	4TB	6TB	6.6TB	10.2TB
Number of Media Storage Slots	40	60	68	102
Number of Drives	Up to 4	Up to 4	Up to 6	Up to 6
Drive Characteristics Type Sustained Transfer Rate Media Compatibility	 LTO Ultrium 15MB/sec. 100GB Ultrium tape cartridges			
Library Reliability (MSBF)	>3.8M	>3.8M	>3.8M	>3.8M
Robotics Avg. Exchange Time	<7 sec.	<7 sec.	<7 sec.	<7 sec.
Bar Code Reader	standard	standard	standard	standard
Automated Mailslot	-	-	single	single
Magazine	5-slot	5-slot	5-slot	5-slot
US Warranty (extended options available) Outside US Contact Plasmon	Three Years. First year on-site 5x9xNBD. Second year is return to factory automation parts and labor only.			
Library Interface	LVD or SE (auto-sensing), SCSI 2 and SCSI 3 compliant 68-pin high density female connector			
Options	Redundant Power Supply 19" Rack Mount		Redundant Power Supply 19" Rack Mount	
Space Requirements Width (in/cm) Height (in/cm) Depth (in/cm) *Allow 3" airflow behind unit and 2" airflow on both sides*				

Specification	V40	V60	V68	V102
Dimensions-Stand Alone				
Width (in/cm)	19/48	19/48	19/48	19/48
Height (in/cm)	33.5/85	33.5/85	47/119	47/119
Depth (in/cm)	33/83	33/83	33/83	33/83
Weight (lbs/kg)	294/133.6	241/109	411/186	447/203
Dimensions-Rack Mount				
Width (in/cm)	17.6/44.7	17.6/44.7	17.6/44.7	17.6/44.7
Height (in/cm)	30.1/76.5 (19U)	30.1/76.5 (19U)	43.3/110 (26U)	43.3/110 (26U)
Depth (in/cm)	30/76.2	30/76.2	31.8/80.8	31.8/80.8
Weight (lbs/kg)	301.4/137	314.4/142.9	420.9/191.3	456.9/207.7
Dimensions-Shipping				
Width (in/cm)	28.5/72.4	28.5/72.4	28.5/72.4	28.5/72.4
Height (in/cm)	47.3/120.2	47.3/120.2	59.4/151	59.4/151
Depth (in/cm)	46.5/118.1	46.5/118.1	46.5/118.1	46.5/118.1
Weight (lbs/kg)	363/165	375/170.5	466.6/212.1	485.9/220.9
Power Consumption (Watts) - typical -	420	420	420	420
Power Requirements				
Voltage	100 to 240 VAC (auto-ranging power supply)			
Frequency	50/60 Hz			
Environmental				
Operating Temperature	+10 to +32°C (+50 to +90°F)			
Operating Humidity	20 to 80% RH non-condensing			

Power Cord Specifications

In the US the 120 VAC power cord shipped with Plasmon libraries meets these criteria:

- The power cord must have a molded NEMA 5-15P male attachment plug on one end.
- The power cord must have a molded IEC type CEE-22 female connector on the other end.
- The power cord must be UL Listed and CSA Certified.

Outside the US contact Plasmon for country specific requirements.

SCSI Cable Specifications

SCSI Cables and Connectors

Plasmon recommends using wide LVD SCSI cables and connectors that conform to SCSI-3 specifications.

NOTE

To comply with the regulations and standards listed in this manual, all SCSI cables and connectors used with the library must be properly shielded.

SCSI Cable Length

The special design of the Plasmon V Series libraries allows a maximum external SCSI cable length of 12 meters (39 ft.) for the standard LVD interface, and 3 meters (9 ft.) for a SE interface.

SCSI Termination

Plasmon uses CS Electronics terminators part number TRM-8900 in all testing during manufacturing.

APPENDIX B
SCSI BUS INFORMATION

SCSI Bus Configuration

The following tables list the recommended SCSI bus configurations for the Plasmon V Series libraries. The figures after each table show diagrams of these bus configurations. For maximum performance, Plasmon recommends no more than two drives on a single SCSI bus.

Please refer to *Appendix A Specifications* in this manual for information on appropriate SCSI cables, connectors, and termination.

Table 10. SCSI Bus Configuration for the V40 - V60

Bus Configuration	Bus Identification	Devices on the bus
One SCSI Bus	Bus 1	Drives 1, 2, and library control
Two SCSI Buses	Bus 1	Drives 1, 2, and library control
	Bus 2	Drives 3 and 4

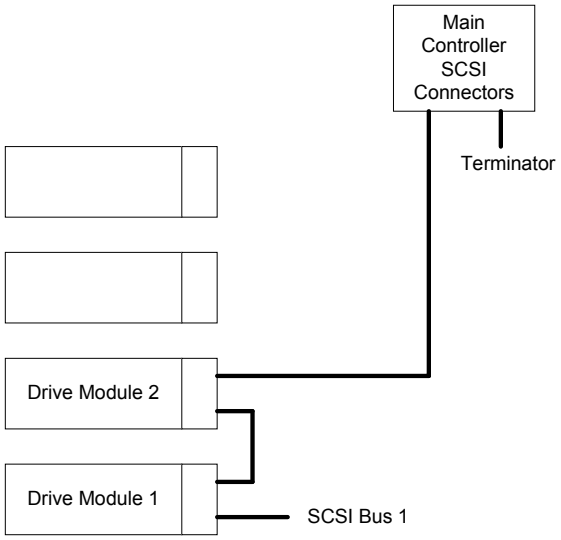

Figure 39. Single SCSI Bus Configuration for the V40 - V60

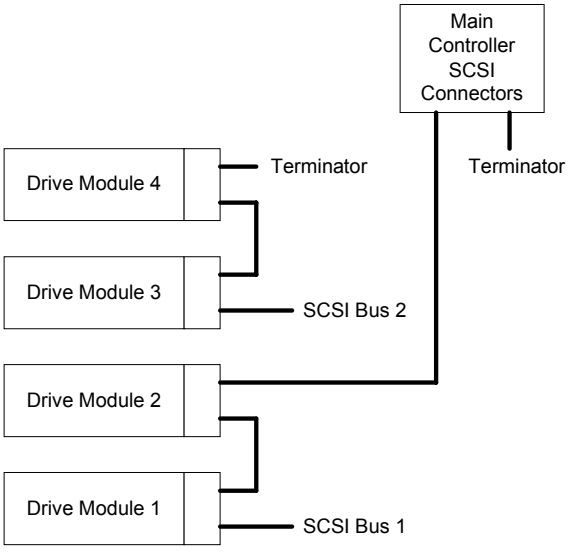

Figure 40. Dual SCSI Bus Configuration for the V40 - V60

Table 11. SCSI Bus Configuration for the V68 - V102

Bus Configuration	Bus Identification	Devices on the bus
One SCSI Bus	Bus 1	Drives 1, 2, and library control
Two SCSI Buses	Bus 1	Drives 1, 2, and library control
	Bus 2	Drives 3 and 4
Three SCSI Buses	Bus 1	Drives 1, 2, and library control
	Bus 2	Drives 3 and 4
	Bus 3	Drives 5 and 6

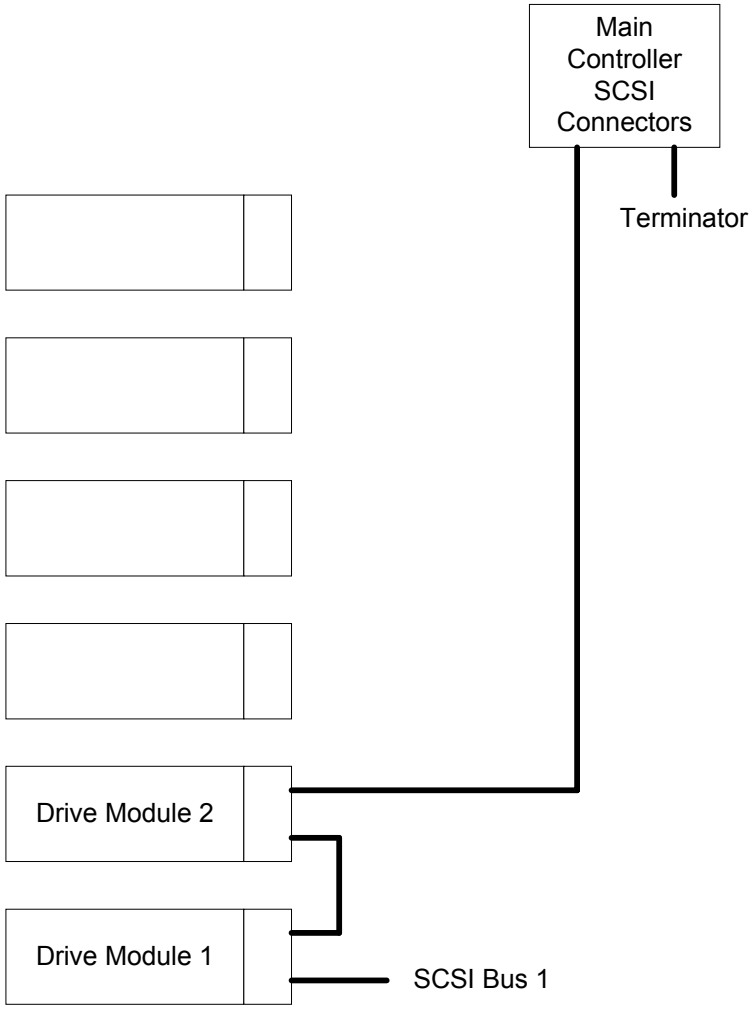

Figure 41. Single SCSI Bus Configuration for the V68 - V102

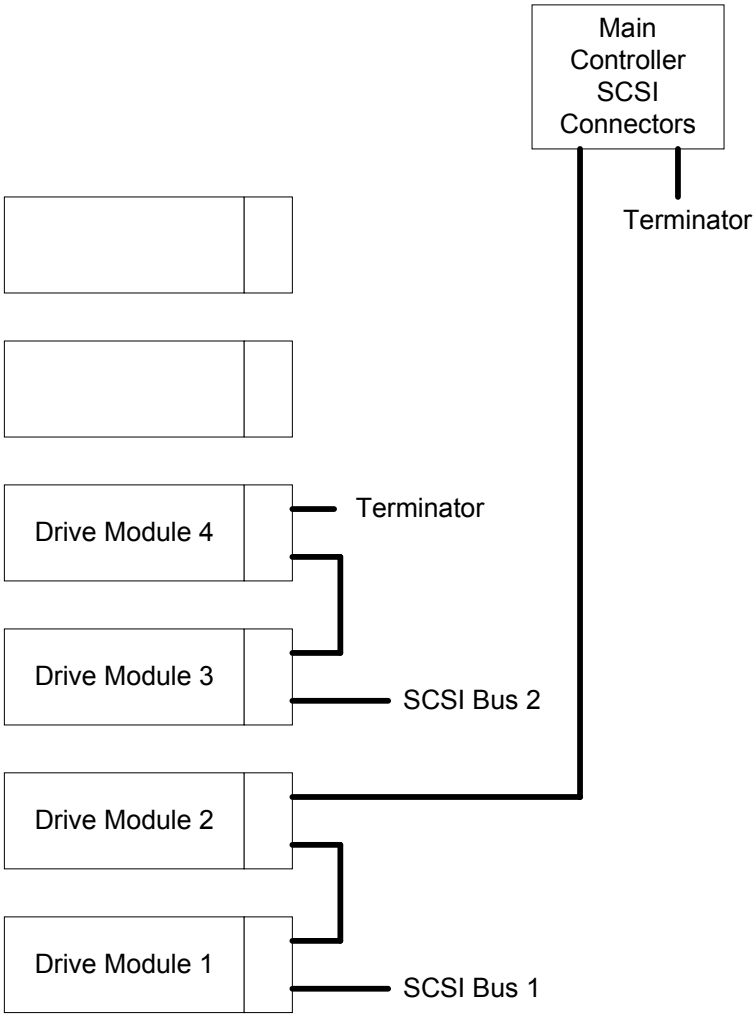

Figure 42. Dual SCSI Bus Configuration for the V68 - V102

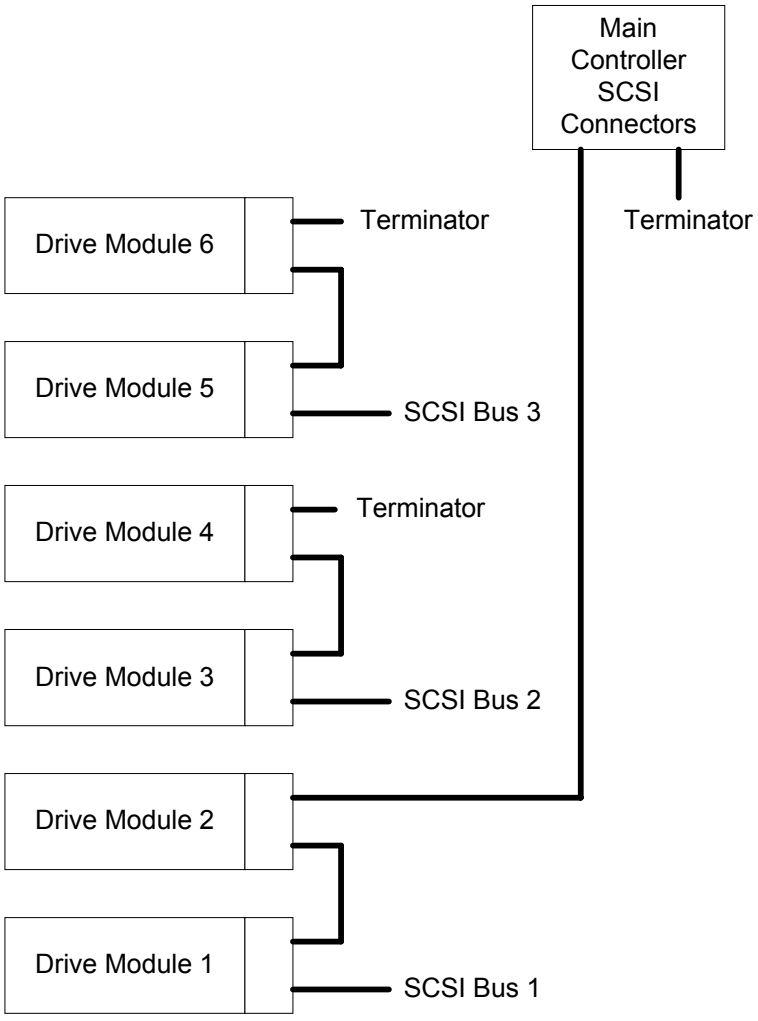

Figure 43. Triple SCSI Bus Configuration for the V68 - V102

SCSI ID Configuration

The SCSI IDs are set at the factory to the following settings for the Plasmon V Series libraries.

Device	SCSI ID
Robotics	6
Drive 1	0
Drive 2	1
Drive 3	2
Drive 4	3

Table 12. Factory Default SCSI IDs for the V40 - V60

Device	1 Bus		2 Buses		3 Buses	
	SCSI Bus	SCSI ID	SCSI Bus	SCSI ID	SCSI Bus	SCSI ID
Robotics	1	6	1	6	1	6
Drive 1	1	0	1	0	1	0
Drive 2	1	1	1	1	1	1
Drive 3			2	0	2	0
Drive 4			2	1	2	1
Drive 5					3	0
Drive 6					3	1

Table 13. Factory Default SCSI IDs for the V68 - V102

APPENDIX C
SAFETY AGENCY STANDARDS

FCC Notice

The equipment to which this manual pertains has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this User's Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for further help, at your own expense.

Industry Canadian Notice per ICES-003

English: This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Industry Canada.

French: Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par l'Industrie Canada.

European Notice

This library system is in conformity with the following directive.

- EN 55022/CISPR 22, Class A
- EN 55024
- EN 61000-3-2
- EN 61000-3-3

This library system is in conformity with the EMC directive and low-voltage directive.

Australia/New Zealand

This equipment has been tested and complies with AS/NZS 3548.

Laser Safety Notice

The bar code reader used in this unit is certified to comply with DHHS rule 21 CFR Chapter 1, Sub-chapter J as a Class 2 laser product under the U.S Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the bar code reader does not produce harmful radiation.

Since laser light emitted inside the library unit is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

Power Cord Set Selection

The voltage rating and the current rating of the power cord set shall be higher than the rated voltage and current of this unit. The voltage of the power cord set shall be higher than the power source.

For the U.S. and Canada:

Power cord must be UL listed and CSA labeled. Type SJT, SVT, ST, SJO or SO, 3-conductors, No. 18 AWG, rated 125v, 10A

For Germany and continental Europe:

STROMANFNAHME: 100-240 VAC, 50/60 Hz, 6A.

Für eine 230V-Anwendung, ist eine harmonisierte <HAR> konfektionierte Leitungsschnur, Typ H05vvf3G1.00, die für 250V/10A oder die Gleichwertigkeit geeognet ist, zu benutzen.

APPENDIX D
ERROR CODES

In the event of an error while on-line, the library retries the operation that failed. If this operation fails, the library attempts to return the media to their location before the operation started, and sends an error code to the host computer. This error code is displayed on the front panel of the library.

The following error codes are provided to assist in detecting the cause or finding a corrective action for a library error. Note the error code number displayed on the front panel, then find the corresponding error code from the following table..

Error	Sub Code	Error Description	Suspect Area	Corrective Action
00		Unknown error		No additional information
01		Flash checksum failure	Found during SCSI send diagnostics	Replace main board, or reprogram FLASH memory
	1	Found during SCSI send diagnostics		
	2	Detected while unit was monitoring internal integrity		
0A		Firmware error: bad element code	Firmware bug	Reprogram FLASH memory
0C		Firmware error: operation stack overflow	Firmware bug	Reprogram FLASH memory
	1	Recording operation		
	2	Undoing operation		
0D		Firmware error: bad operation stack index	Firmware bug	Reprogram FLASH memory
0e				
0f				
1A		Drive not installed	Module cables, drive, interface PWA or power to drive	Make sure drives are not in a service or off state

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	Trying to position to drive		
	2	Checking to move to or from a drive		
	3	Drive testing		
	4	During prepare for cycle testing		
1B		Source is empty	Operator error	Rescan elements
	1	During check move (slot or drive is empty)		
	2	During check move (mailslot is empty)		
	3	First destination is empty (SCSI exchange command)		
	4	Forced error from the error test command (command sent using the serial port)		
1C		Destination is full	Operator error	Rescan elements
	1	Picker stalled early in the store process		
	2	Trying to empty picker		
	3	During check move (slot or drive is empty)		
	4	During check move (mailslot is empty)		
	5	Second destination is full (SCSI exchange command)		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
1D		Element unexpect-edly empty	Slider motor offsets	Run slider offsets or rescan elements
	1	Media did not block VP sensor during a pick		
	2	Cleaner slot is empty		
	3	During prepare for cycle testing		
1E		Element unexpect-edly full	NVRAM or host soft-ware	Rescan elements
	1	No space for cleaner cartridge		
	2	Media in drive (try-ing to return a media to a drive)		
	3	During prepare for cycle testing		
	4	Can't export cleaner cartridge because the mailslot is full		Remove cartridge from mailslot
	5	Can not export a media, the mailslot is full (Maintenance mode)		Remove media from mailslot
1F		Picker is full	Operator error or media transport assembly	Check for mechanical dam-age if media is in transport assembly.Rescan elements or run rezero unit
	1	VP sensor blocked moving to the pick position		
	2	VP sensor blocked moving to the unload drive position		
	3	Both pickers are not empty to perform the move (during check move)		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	4	During check move		
	5	Exchange media (SCSI command)		
20		Pick media failure	Media transport assembly picker fingers, slider motor	
	1	Picker fingers disengaged from media after starting to pick media		
	2	Pick media retry aborted		
21		Store media failure	Slider motor, vertical offset adjustment, or media storage element	
	1	Media did not block VP sensor during a store		
	2	Picker stalled more than five motor steps during a store media process		
	3	Picker fingers did not release from the media, or the picker stalled during a media store operation		
23		Drive not ready	Drive or media	Replace drive or media
24		Drive load failure	Bad media drive or media transport assembly	Check media transport assembly for mech failure, replace drive
	1	Media not seen in picker	Bad media drive or media transport assembly	
	2	Pick fingers did not release from media	Bad media drive or media transport assembly	Check finger operation

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Drive did not pull in the media	Bad media drive or media transport assembly	Check power to drive
	4	Drive load retry aborted	Bad media drive or media transport assembly	
25		Drive unload failure	Bad media drive or media transport assembly	Check media transport assembly for mech failure, replace drive
	1	Media disengaged from picker		
	2	Pick fingers did not grab media		
	3	Unload drive retry aborted		
	4	Unload drive retry (before the comple-tion status was even set to started)		
26		Eject failure	Bad media drive or drive interface	Check connections, replace drive or drive cable
	1	Eject time out failure		
	2	Changer ejects are not allowed (during retry)		
	3	Waiting for drive eject status		
29		No terminator power	Main control board	Replace internal SCSI cable or main control board SCSI interface
2b		Cannot export media	Mailslot sensor or host software	
	1	Checking for an empty mailslot		
	2	Could not return a media to it’s original slot, tried to export media		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Trying to return the media to the mailslot		
2c		Mailslot is open	Mailslot open sensor or host software	
	1	During check move (importing)		
	2	During check move (exporting)		
	3	Checking bar code		
	4	Trying to process the prevent/allow removal command		
	5	During SCSI move medium command		
	6	During SCSI exchange command		
	7	Positioning to mailslot		
2d		Media removal prevented	Host software	
	1	Open/close mailslot (SCSI command)		
	2	Move medium (SCSI command)		
	3	Exchange medium (SCSI command)		
2f		Pivot failure	Pivot motor, pivot cable, pivot sensors	Check connections and sensors, replace motor
	1	Pivot is losing position accuracy		Re-run auto calibration “find pivot alignment”
	2	Completion status from DSP	Main control board	
32		Lift position Failure	Lift motor, lift cable or main controller	
	1	Destination lift position is invalid		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	During lift position lift time-out		
	3	Position retry aborted		
33		Lift blocked	Vertical path sensor	Check for media protruding from storage slot, replace sensor
	1	Picker not in the blocked column		
	2	Picker not in front of the blocking element, but it is in the blocked column		
	3	Media is blocking VP sensor after storing media		
	4	Media is blocking VP sensor after picking from a drive (during initialize)		
	5	Initialize was not able to unblock the VP sensors		
	6	VP blocked during lift positioning (if column is identified as 0, the blockage was momentary		
	7	VP blocked trying to return a media to its last known location		
	8	Lift is not in the blocking column (during initialize)		
35		Flip failure	Flip motor or gear	Check gear on flip motor shaft, replace flip motor
	1	Flip is losing position accuracy		Re-run auto calibration
	2	During position lift		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Flip stalled (neither flip sensor is blocked)		
	4	Completion status from DSP	Main controller PWA	
	5	wrong side of flipper is up		
3B		Picker position failure	Picker motor or fingers jammed	Check for mechanical failure, replace media transport assembly
	1	Completion status from DSP	Main controller PWA	
	2	Lift is not homed when trying to position the picker		
	3	Bad picker position code		
	4	Picker home sensor is not blocked		
	5	Picker home sensor is blocked unexpectedly		
	6	Picker stalled while retracting		
	7	Picker stalled while moving out to pick a media. This problem is detected when the picker returns to the home position		
	8	Picker tripped the home sensor unexpectedly moving to the forward position after storing a media. (storage slot is unexpectedly full)		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
3C		Swap picker failure	Picker motor, picker home sensors or selector nut detent	Check for mechanical failure, replace media transport assembly
3F		Slider misposition	Slider motor or fingers jammed. Forward position sensor	Check for mechanical failure, replace media transport assembly
	1	Picker fingers are in a danger zone for moving the lift		
	2	Picker is not blocking the picker forward position sensor when trying to move the lift		
43		I/O station blocked	I/O door plate	Check for smooth operation of I/O door opening
	1	The “IN” (retracted) position sensor is still blocked. The motor did not move	Mailslot motor or mailslot PWA	
	2	The motor stalled during movement		
44		Picker not at drive	Operator error	
	1	Attempting to load a drive		
	2	Attempting to unload a drive		
45		Element scan failure	Lift cable or lift motor	Check connections, replace cable, or lift motor
	1	Failed to move the lift motor		
	2	Invalid element (media present check)	Host software	
49		Barcode reader is not installed	Barcode reader cable connections	
4a		Rear door open	Rear door sensor or cable	Check sensor and cable

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	Doing background process checking		
	2	Checking if library is ready for motor movement		
	3	Trying to initialize library		
4b		Barcode read failure	Barcode reader	Check that labels from media have not come off
4d		Can’t configure drive	Drive module, drive or drive interface PWA	
4e		Drive not respond-ing	Drive module, drive or drive interface PWA	
	1	Getting drive status		
	2	Waiting on status from maintenance command		
	3	Waiting on set con-figuration command		
	4	Drive did not ACK the set configura-tion command		
	5	Powering on drive module		
	6	Waiting on drive spindown signal to be asserted		
	7	Waiting on drive eject signal to be asserted		
52		Mailslot close fail	Mailslot motor or mailslot PWA	
	1	The “OUT” (extended) position sensor is still blocked. The motor did not move		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	The motor stalled during movement		
53		Component failure		
54		Bad drive type	Drive module or drive interface PWA	
55		Drive SCSI address conflict		
	1	Address conflict with changer		
	2	Address conflict with another drive		
56		Overheat library internal temperature		
59		Power supply fail		Replace the identified power supply
	1	Power supply is removed		
	2	Power supply fan has failed		
	3	Power supply power failure		
5a		Cable connect failure		Re-seat connection or replace cable
	1	CJ3 to front panel	Main controller PWA	
	2	CJ4 to pivot, lift, MTA	Main controller PWA	
	3	CJ5 to VP decoder PWA	Main controller PWA	
	4	CJ6 configuration plug	Main controller PWA	
	5	CJ7 interlocks, reference sensor	Main controller PWA	
	6	CJ10 to power distribution PWA	Main controller PWA	
	7	CJ12 to external SCSI interface	Main controller PWA	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	CJ7 to SCSI isolator PWA	2 to 16 drive controller PWA	
	2	CJ6 board address plug	2 to 16 drive controller PWA	
	1	CJ3 board address plug	2 to 16 drive controller PWA	
	1	CJ1 SCSI to external SCSI interface	17 to 31 (SCSI isolator)	
	1	CJ4 mailslot sensors	32 to 35 (mailslot/ magazine)	
	2	CJ6 board address plug and power	32 to 35 (mailslot/ magazine)	
	3	CJ8 magazine sensors and solenoid	32 to 35 (mailslot/ magazine)	
	1	CJ4 passthrough sensors	36 to 39 (passthrough)	
	2	CJ6 board address plug	36 to 39 (passthrough)	
	1	CJ3 or CJ4 SCSI config or connection	40 (MC SCSI adapter)	
	1	CJ2 VP detectors	41 ((VP decoder)	
5b		Fuse overload		Check indicated cable for shorts
	1	F1 fuse +24V interface CJ3 to CAN bus	Main controller PWA	
	2	F2 fuse +5V interface CJ3 to CAN bus	Main controller PWA	
	3	F3 fuse +25V interface CJ4 to pivot, lift, MTA	Main controller PWA	
	4	F4 fuse +5V interface CJ4 to pivot, lift, MTA	Main controller PWA	
	5	F5 fuse +5V interface CJ5 to VP decoder	Main controller PWA	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	6	F6 fuse +5V interface CJ8 to MC SCSI	Main controller PWA	
	7	F7 fuse +12V interface CJ8 to MC SCSI	Main controller PWA	
	8	F9 fuse +5V interface CJ12 to external SCSI	Main controller PWA	
	9	F10 fuse +24V for lift motor. Interface CJ4 to pivot, lift	Main controller PWA	
	10	F11 fuse for stepper motors. Interface CJ4 to pivot, lift, MTA	Main controller PWA	
	1	F1 fuse +12V interface CJ4 to drive module fan	2 to 16 drive controller	
	2	F3 fuse +24V for drive power control switches	2 to 16 drive controller	
	1	F1 fuse +5V terminator power to drive module CJ2	17 to 31 SCSI isolator	
	2	F2 fuse +5V terminator power for LVD SCSI CJ1	17 to 31 SCSI isolator	
	1	F2 fuse +24V for mailslot stepper motor CJ7	32 to 35 mailslot magazine	
	2	F3 fuse +24V for magazine solenoid CJ8	32 to 35 mailslot magazine	
	1	F2 fuse +24V for passthrough stepper motor CJ7	36 to 39 passthrough	
	1	F1 fuse +5V terminator power for LVD SCSI CJ2	40 MC SCSI adapter	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	F1 fuse +5V interface CJ7 for power to mailslot PWA	42 power distribution	
	2	F2 fuse +5V interface CJ7 for power to RMI board	42 power distribution	
	3	F3 fuse +24V interface CJ7 for power to mailslot PWA	42 power distribution	
	4	F4 fuse +24V interface CJ7 for cabinet cooling fans	42 power distribution	
5c		Circuit board fail		Replace PWA
	1	FLASH checksum	Main controller PWA	
	2	NVRAM failure	Main controller PWA	
	3	Main CPU internal failure	Main controller PWA	
	4	DSP internal failure	Main controller PWA	
	5	DSP to main CPU communication failure	Main controller PWA	
	6	Lift current monitor	Main controller PWA	
	7	Thermal sensor failure	Main controller PWA	
	8	Crystal failure	Main controller PWA	
	1	CPU internal failure	2 to 16 drive controller	
	2	I/O loopback test failure	2 to 16 drive controller	
	3	Unexpected reset (watchdog)	2 to 16 drive controller	
	4	Communication failure, board stops responding to poll	2 to 16 drive controller	
	1	CPU internal failure	32 to 35 mailslot magazine	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	I/O loop back test failure	32 to 35 mailslot magazine	
	3	Unexpected reset (watchdog)	32 to 35 mailslot magazine	
	4	Communication failure, board stops responding to poll	32 to 35 mailslot magazine	
	5	Thermal sensor / EEPROM failure	32 to 35 mailslot magazine	
	1	CPU internal failure	36 to 39 passthrough	
	2	I/O loop back test failure	36 to 39 passthrough	
	3	Unexpected reset (watchdog)	36 to 39 passthrough	
	4	Communication failure, board stops responding to poll	36 to 39 passthrough	
	1	SCSI chip failure	40 MC SCSI adapter	
	2	I/O loop back test failure	40 MC SCSI adapter	
	3	FIFO failure	40 MC SCSI adapter	
	1	Decoder control failure	41 ((VP decoder)	
	1	Supply monitor failure	42 power distribution	
	1	USART failure	43 to 57 drive module interface	
	2	Thermal sensor failure	43 to 57 drive module interface	
	1	CPU internal failure	58 front panel interface	
	2	NVRAM failure	58 front panel interface	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Unexpected reset (watchdog)	58 front panel interface	
	4	Communication failure board stops responding	58 front panel interface	
	5	Real-time clock failure	58 front panel interface	
	6	LCD failure	58 front panel interface	
	1	Failed margin test	59 - 76 VP emitter/ detector	
	2	Emitter or detector failure	59 - 76 VP emitter/ detector	
	3	Blocked response time	59 - 76 VP emitter/ detector	
	4	Unblocked response time	59 - 76 VP emitter/ detector	
5d		Drive overheat warning		
5e		Drive shutdown due to overheat		
5f		Drive shutdown due to low fan speed		
62		Not a cleaning cartridge		
63		Drive module low fan speed		Replace fan
66		Mailslot position failure	Check mailslot sensors	
67		Pass-through position failure	Pass-through PWA	
	1	Completion status from pass-through interface	Pass-through PWA	
	2	Motor did not move sending passthrough		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Motor stalled while moving sending passthrough		
	4	Motor did not move recalling passthrough		
	5	Motor stalled while moving recalling passthrough		
68		Position time-out mailslot	Mailslot PWA	
69		Position time-out, passthrough	Pass-through PWA	
6c		Start drive service		
6d		End service drive		
6e		Switch to alternate MTA		
6f		Switch to Primary MTA		
70		Comm time-out DSP	Main controller PWA	
	1	Commanding DSP		
	2	Waiting for the lift to complete		
	3	Waiting for the picker to complete		
	4	Waiting for the pivot to complete		
	5	Waiting for the flip to complete		
	6	Reading flip sensor status		
	7	Waiting for multiple motor axis to complete their movements		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
71		CAN time-out drive	1 to 12 drive controller or CAN cable connections	
	1	Checking drive interface board (self test)		
	2	Getting drive status		
	3	Powering drive off		
	4	Powering drive on		
	5	Changing drive ID		
	6	Setting drive options		
	7	Sending maintenance command to a drive		
	8	Sending set configuration to a drive		
	9	Sending parameter bytes to a drive		
	10	Powering off module		
	11	Powering on module		
	12	Resetting drive interface board		
	13	Enabling/disabling SCSI isolation board		
	14	Blinking drive LEDs		
	15	Turning on/off drive LEDs		
	16	Waiting for drive ready		
	17	Starting drive spin-down		
	18	Ejecting media from a drive		
	19	Reading fan tachometer		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	20	Getting drive module temperature		
72		CAN time-out mailslot	Mailslot PWA or CAN cable connections	
	1	Reading sensors		
	2	Positioning motor		
	3	Stepping motor in motor test		
	4	Trying to reduce holding torque on motor		
	5	Reading stepper motor count		
	6	Zeroing stepper motor count		
73		CAN time-out magazine	Mailslot PWA or CAN connections	
	1	Checking for mailslot board		
	2	Reading sensors		
	3	Turning on access LED		
	4	Turning off access LED		
	5	Releasing magazine latch		
	6	Reading cabinet temperature		
74		CAN time-out passthru	Pass-through PWA or CAN connections	
	1	Reading sensors		
	2	Positioning passthrough mechanism		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Stepping motor in motor test		
	4	Trying to reduce holding torque on motor		
	5	Reading stepper motor count		
	6	Zeroing stepper motor count		
	7	Checking for passthrough board		
75		SCSI bus not isolated for service	SCSI isolator PWA	SCSI bus may be frozen in a busy state
78		Mailslot not installed		
80		Magazine not installed		
	1	Trying to position to magazine		
	2	No magazine interface board found		
	3	During checking move		
	4	Checking element status		
	5	Checking barcode		
81		Magazine not latched	Magazine latch sensor or mailslot PWA	
	1	Trying to position to magazine		
	2	During checking move		
82		Magazine release prevented	Operator error	
84		Magazine release fail	Release solenoid or mailslot PWA	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
F7		SCSI parity error	Terminator SCSI cable	Check for conflicting SCSI ID's
F9		Abort message received	Terminator SCSI cable	Check for conflicting SCSI ID's
FD		Host communica-tion time-out	Terminator SCSI cable	Check for conflicting SCSI ID's

P

Q

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Contacting Plasmon

To obtain technical support in the United States	
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	1-719-593-4192 (fax)
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	44 (0) 1763 264 444 (fax)
e-mail	support@plasmon.co.uk
World Wide Web	www.plasmon.com
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	1-719-593-4192 (fax)

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